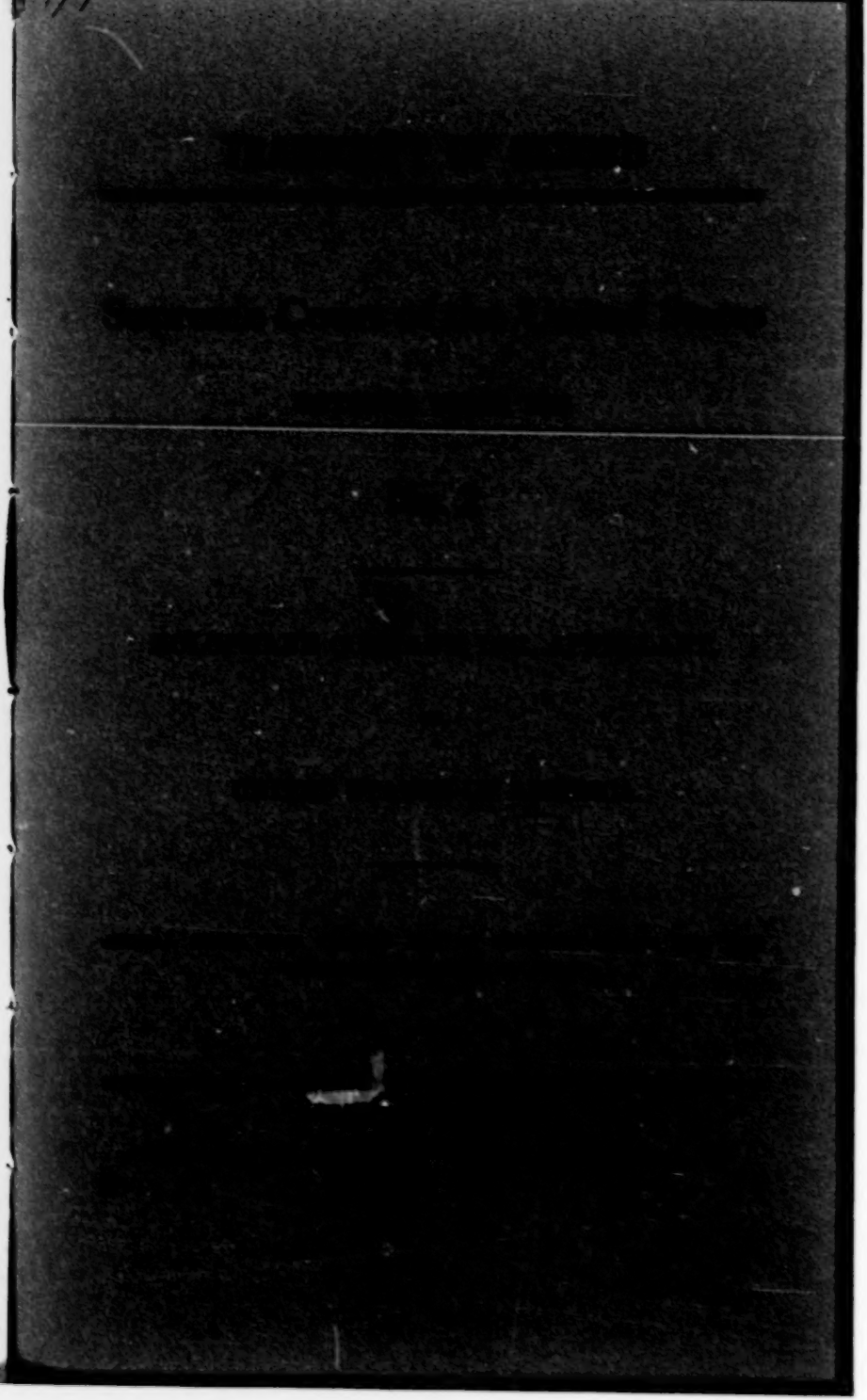

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1956

No. 2

HOLOPHANE COMPANY, INC., APPELLANT,

vs.

UNITED STATES OF AMERICA

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF OHIO

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IN UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF OHIO, EASTERN DIVISION

Civil No. 2659

UNITED STATES OF AMERICA

versus

HOLOPHANE COMPANY, INC.

DOCKET ENTRIES

11/10/49. Complaint filed.
11/10/49. Summons and copy of complaint to U. S. Marshal.
11/29/49. Summons returned executed on 11/14/49 and filed.
12/1/49. Entry defendant granted to 1/3/50 for leave to plead.
12/30/49. Answer of defendant filed.
12/30/49. Certificate of service of copy of answer.
11/16/50. Trial notice filed.
11/22/50. Plaintiff's trial brief filed.
12/1/50. Motion of defendant for extension of time to file trial brief.
1/4/51. Entry granting defendant extension of time to 2/15/51.
2/12/51. Defendant's trial brief filed.
12/28/51. Motion of plaintiff for production of documents and affidavit filed.
12/28/51. Brief of plaintiff in support of motion for production filed.
1/17/52. Order sustaining motion for production of documents filed.
4/20/52. Order continuing case for trial to 6/2/52 filed.
5/7/52. Request of plaintiff for admissions filed.
5/19/52. Denial of defendant to certain requests for admissions filed.
5/21/52. Motion for order directing subpoena filed.
5/21/52. Order directing subpoena to issue filed.

Docket Entries

5/21/52. Subpoenas (2) issued to counsel for plaintiff.

5/23/52. Stipulation filed.

5/28/52. Subpoenas (2) returned executed and filed.

6/2/52. Trial to court—opening statements—testimony of plaintiff, not concluded. Adjourned to Wednesday, 10 AM.

6/4/52. Trial continued—testimony of plaintiff concluded—testimony on behalf defendant concluded.

6/4/52. Memorandum of plaintiff objecting to introduction of defendant's exhibits 1—18.

6/4/52. Note: Defendant given 10 days for reply memo.

6/4/52. Note: 2 weeks given counsel in which to confer regarding settlement.

6/4/52. Plaintiff's brief and finding of facts and conclusions of law due 6 weeks after receipt of transcript of proceedings from reporter, or expiration of 2 weeks period for negotiations.

6/4/52. Defendant's brief and finding of facts and conclusions of law due 30 days thereafter.

6/4/52. Plaintiff's reply brief, if desired, due 10 days thereafter.

6/10/52. Reporter's transcript filed.

7/10/52. Reporter's transcript filed.

8/8/52. Stipulation as to time for filing findings of fact and conclusions of law filed.

10/20/52. Brief of defendant in support of admissibility of defendant's exhibits 1 through 17 filed.

10/20/52. Entry as to filing of briefs filed.

10/23/52. Plaintiff's reply brief on admissibility of certain evidence filed.

11/17/52. Entry briefs to be filed by 1/16/53 filed.

12/2/52. Proposed findings and conclusions and decree of plaintiff filed.

1/5/53. Stipulation and order briefs due 2/2/53.

1/22/53. Defendant's proposed findings of fact and conclusions of law filed.

1/22/53. Defendant's proposed form of decree filed.

1/22/53. Defendant's memo in support of proposed findings filed.

1/22/53. Motion of defendant for oral argument filed.

2/5/53. Reply brief of U. S. filed.

2/5/53. Motion of U. S. for an order relating to proposed oral argument filed.

2/5/53. Plaintiff's second proposed findings of fact filed.

3/12/53. Order setting final arguments 4/10/53.

5/1/53. Statement of defendant filed.

5/8/53. Hearing on proposed findings of fact and conclusions of law and final judgment. 10 days for any supplemental briefs.

5/14/53. Amendment to Government's proposed decree filed.

5/18/53. Supplemental memo of defendant filed.

6/5/53. Reporter's transcript filed.

2/8/54. Findings of fact and conclusions of law filed.

2/8/54. Final judgment and decree filed.

[fol. 3] 2/19/54. Motion for defendant for new trial and memorandum filed.

2/19/54. Motion of defendant for stay of execution filed.

3/2/54. Stipulation filed.

3/8/54. Plaintiff's brief in opposition to defendant's motion filed.

3/10/54. Notice of hearing on motion filed.

4/5/54. Supplemental motion for altering or amending judgment filed.

4/9/54. Note: Motion to amend submitted.

5/7/54. Reporter's trancript filed.

2/9/55. Memorandum—motion of defendant overruled in part filed.

2/9/55. Stipulation and order striking parts of final decree filed.

4/9/55. Notice of appeal of defendant and designation filed.

4/22/55. Cross designation of plaintiff filed.

6/2/55. Entry on Memorandum of 2/9/55 filed nunc pro tunc as of 2/9/55.

6/3/55. Certificate on Appeal and Record delivered to counsel.

6/4/55. Notice of Appeal of Defendant filed.

6/4/55. Certificate and Notice of Appeal delivered to counsel.

[fol. 4] IN UNITED STATES DISTRICT COURT

[Title omitted]

COMPLAINT—Filed November 10, 1949

The United States of America, plaintiff, by its attorneys, acting under the direction of the Attorney General of the United States, brings this action against the defendant and complains and alleges as follows:

I

Jurisdiction and Venue

1. This complaint is filed and these proceedings are instituted against the defendant under Section 4 of the Act of Congress of July 2, 1890, c. 647, 26 Stat. 209, as amended, entitled "An Act to protect trade and commerce against unlawful restraints and monopolies," commonly known as the Sherman Antitrust Act, in order to prevent and restrain continuing violations by defendant, as hereinafter alleged, of Section 1 of the Sherman Antitrust Act.

2. The defendant Holophane Company, Inc., transacts business, maintains a factory and is found within the Eastern Division of the Southern District of Ohio.

II

The Defendant and Co-Conspirators

3. Holophane Company, Inc., hereinafter referred to as "Holophane," a corporation organized and existing under [fol. 5] the laws of the State of Delaware and maintaining offices in New York, New York, and a factory in Newark, Ohio, is named defendant herein. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware.

4. Holophane, Limited, hereinafter referred to as "Limited," a joint stock company organized and existing under the laws of the United Kingdom, with offices and principal place of business in London, England, is not made a defendant but is named as a co-conspirator herein. It is engaged in the sale of prismatic glassware and in the manu-

facture and sale of illuminating appliances containing prismatic glassware.

5. In Societe Anonyme Francaise Holophane, hereinafter referred to as "Francaise," a corporation organized and existing under the laws of France, with offices and principal place of business in Paris, France, is not made a defendant but is named as a co-conspirator herein. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware.

III

Nature of Trade and Commerce Involved

6. Prismatic glassware includes reflectors, refractors, lenses and lens plates comprised of glass, bearing configurations or prisms in the form of circles or lines or both, and is used to control the distribution and direction of artificial light. Prismatic glassware incorporated in an illuminating appliance may be used to direct rays of light to a small area such as a surgical operating table, or it may be used to diffuse rays of light over a wide area such as an office.

7. Illuminating appliances containing prismatic glassware are highly efficient and effective means of lighting [fol. 6] factories, offices, schools, stores, hospitals, art galleries and radio broadcasting studios. Prismatic glassware is considered highly desirable for use in transportation, marine, aviation, street and traffic lighting fixtures.

8. Defendant Holophane manufactures substantial quantities of prismatic glassware for use in illuminating appliances. It has long been active in engineering, developing, and extending the use of prismatic glassware in illuminating appliances. More than 95%, by value, of all the prismatic glassware used in street lighting luminaires is produced by the defendant Holophane. In 1948 defendant Holophane's gross sales of prismatic glassware and illuminating appliances cont*aing* prismatic glassware were in excess of $3,000,000.

9. Prismatic glassware and illuminating appliances containing prismatic glassware are sold and shipped by the defendant Holophane from its factory in Ohio to customers

located in other states and territories of the United States and, subject to the limitations hereinafter alleged, to customers located in foreign nations. Holophane sells prismatic glassware and illuminating appliances in Canada through its wholly-owned subsidiary, The Holophane Company Limited, of Canada.

IV

Offenses Charged

10. Beginning in or about the year 1925 and continuously thereafter up to and including the date of the filing of this complaint, the defendant and the co-conspirators have been engaged in an unlawful combination and conspiracy in restraint of the aforesaid trade and commerce in prismatic glassware and illuminating appliances containing prismatic glassware among the several states of the United States and with foreign nations, and the defendant and co-con- [fol. 7] spirators have been and now are parties to unlawful contracts, agreements and understandings in restraint of said trade and commerce, all in violation of Section 1 of the Sherman Act. The defendant and co-conspirators threaten to and will continue said offense unless the relief hereinafter prayed for in this complaint is granted.

11. The combination and conspiracy herein alleged has consisted of a continuing concert of action whereby the defendant and the co-conspirators have suppressed and eliminated competition among themselves and with others in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware, in all markets of the world, the terms of which have been, among other things, that:

(a) Each party be allocated a designated territory for the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware;

(b) Each party refrain from selling, shipping or carrying on trade in prismatic glassware of illuminating appliances containing prismatic glassware, or engaging in any similar business, in the territory allocated to any other party, except at the request and for the account of that other party;

(c) Each party refrain from applying for or obtaining patent or trademark protection in the territory allocated to any other party;

(d) Each party use every means in its power to prevent the exportation of any products sold or manufactured by it into the territory allocated to any other party;

(e) Each party communicate to the other parties [fol. 8] every invention, design, improvement or trademark relating to prismatic glassware and illuminating appliances containing prismatic glassware; and

(f) Holophane and Limited exchange all research, technical, manufacturing and commercial information relating to any products manufactured or sold by either party.

12. The aforesaid combination and conspiracy has been formed and accomplished, among other means, by the following contracts, agreements and understandings:

Effective Date	*Parties*
September 15, 1925	Holophane and Limited
September 15, 1925	Holophane and Francaise
February 1, 1944	Holophane and Limited
June 11, 1945	Holophane and Limited
May 24, 1921	Francaise and Limited
November 23, 1947	Francaise and Limited

13. For the purpose of effectuating the aforesaid offense, the defendant and the co-conspirators have done the things which, as hereinbefore alleged, they combined, conspired, and agreed to do.

V

Effects of the Conspiracy

14. The aforesaid combination and conspiracy has had the following effects with respect to prismatic glassware and illuminating appliances containing prismatic glassware:

(a) Foreign commerce of the United States has been unreasonably restrained;

(b) Exports from the United States have been unreasonably restricted;

(c) Imports into the United States and its territories have been unreasonably restricted;

(d) The markets of the world have been divided [fol. 9] and allocated among the defendant and co-conspirators; and

(e) Competition among the defendant and co-conspirators and with others has been suppressed and eliminated throughout the markets of the world.

VI

Prayer

Wherefore, plaintiff prays:

1. That the Court adjudge and decree that the defendant has combined and conspired with the co-conspirators to restrain trade and commerce among the States and with foreign nations in violation of Section 1 of the Sherman Antitrust Act; and that the contracts, agreements, understandings and practices alleged in this complaint are in violation of the Sherman Antitrust Act.

2. That the defendant and its officers, directors, agents, representatives, and all persons and corporations acting or claiming to act on behalf of it, be perpetually enjoined from combining, conspiring or agreeing to restrain commerce in prismatic glassware or illuminating appliances containing prismatic glassware among the several States of the United States and with foreign nations and that they be perpetually enjoined from engaging in or participating in practices, contracts, relationships or understandings, or claiming any rights thereunder, having the purpose or effect of continuing, reviving or renewing any of the violations of the Sherman Antitrust Act set forth and described in this complaint.

3. That the contracts, understandings and agreements between the defendant and its co-conspirators, heretofore alleged, be ordered terminated and cancelled.

[fol. 10] 4. That the defendant and its officers, directors, agents, representatives, and all persons and corporations acting or claiming to act on behalf of it, be perpetually en-

joined from carrying out, claiming any rights under, or entering into any contract, agreement or understanding in any manner (a) restricting exportation by defendant, or by any customer of defendant, of prismatic glassware or illuminating appliances containing prismatic glassware; (b) dividing markets or allocating territories for the sale of such products; or (c) restricting the importation of such products.

5. That the Court adjudge and decree that the defendant has unlawfully used the patent and trademark rights owned or controlled by it in instituting, effectuating and maintaining the aforesaid offense, and that the Court enter such orders relating to the trade-name "Holophane," and to the defendant's patent rights relating to prismatic glassware and illuminating appliances containing prismatic glassware, as the Court may deem appropriate and necessary (a) to prevent further unlawful use thereof, (b) to dissipate the effects of the unlawful conduct herein alleged and (c) to establish free and unfettered competition in the trade and commerce herein described.

6. That the plaintiff have such further, general and different relief as the nature of the case may require and the Court may deem proper in the premises.

7. That the plaintiff recover its taxable costs.

Dated: Nov. 10, 1949.

J. Howard McGrath, Attorney General, Herbert A. Bergson, Assistant Attorney General, Ray J. O'Donnell, United States Attorney, George L. Derr, Trial Attorney, Robert B. Hummel, Norman H. Seidler, Eugene C. Peck, II, Attorneys.

[fol. 11] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

ANSWER—Filed December 30, 1949

The defendant answers the complaint herein as follows:

First Defense

The complaint fails to state a claim against defendant upon which relief can be granted.

Second Defense

Referring to Paragraph 1 of the complaint, defendant denies any violation of the Sherman Antitrust Act. Referring to Paragraphs 3, 4, and 5 of the complaint, the defendant denies any conspiracy with Holophane, Limited, or Societe Anonyme Francaise Holophane, or any other person or firm. Referring to Paragraph 8 of the complaint, the defendant denies that it produces more than ninety-five (95%) percent by value of all the prismatic glassware used in street lighting luminaries, and the defendant alleges that its gross sales of street lighting equipment, including prismatic glassware and metal parts, were only Four Hundred Sixty Two Thousand ($462,000) Dollars in 1948, that its street lighting equipment business is only approximately fifteen (15%) percent of its total business, that it manufactures less than one (1%) percent of all the prismatic glassware manufactured in the United States, and that all metal parts used in illuminating appliances sold by the defendant are manufactured by firms other than the defendant. The [fol. 12] defendant denies Paragraph 10, 11, 12, 13 and 14 of the complaint.

Third Defense

The defendant alleges that contracts, agreements, and understandings between it and Holophane, Limited, and between it and Societe Anonyme Francaise Holophane were entered into for the purpose of accomplishing the sale of business and goodwill thereof in the territories set forth in such contracts, agreements, and understandings. The contracts, agreements, and understandings were reasonable

and necessary for the protection of the business and goodwill sold, and were not and are not a violation of the Sherman Act or any other State or Federal Act.

Broad and Cassel, Attorneys for Defendant, 420 Lincoln Road, Miami Beach, Florida., (S.) Lewis Horwitz, of Counsel.

[fol. 13] IN UNITED STATES DISTRICT COURT

[Title omitted]

REQUEST OF PLAINTIFF FOR ADMISSIONS—Filed May 7, 1952

Pursuant to Rule 36, Rules of Civil Procedure, plaintiff, the United States, requests defendant, The Holophane Company, Inc., by May 19, 1952, to make the following admissions for the purpose of this action only and subject to all pertinent objections to admissibility which may be interposed at the trial:

I. That each of the documents described below in this paragraph I, copies or photographs of which are exhibited with this request, is genuine:

Exhibit No.

A-1. Copies of contracts between Holophane Limited and Societe Anonyme Francaise Holophane dated May 24, 1921 (Exhibit A-1a); January 28, 1927 (Exhibit A-1b); February 25, 1929 (Exhibit A-1c); December 7, 1936 (Exhibit A-1d); March 1, 1940 (Exhibit A-1e) and a "Resume" of English-French Agreements (Exhibit A-1f).

A-2. Agreement between Holophane Limited and Joel Brandon Liberman, dated June 6, 1925.

A-3. Agreement between Holophane Limited and Holophane Glass Company, dated June 26, 1925.

A-4. Copy of a letter addressed to Holophane Limited, Elverton Street, Vincent Square, London SW 1 from J. B. Liberman, New York City, dated September 9, 1925.

A-5. Minutes of first meeting of incorporators of Holophane Illuminating Company, Inc. held on September 11, 1925.

[fol. 14] A-6. Two-page letter, undated, to Holophane Illuminating Company, Inc., 342 Madison Avenue, New York City, from Joel B. Liberman embodying an offer and acceptance of the offer to sell the Holophane Glass Company, Inc.

A-7. Agreement between Holophane Limited and the Holophane Glass Company, Inc., dated September 15, 1925.

A-8. Minutes of special meeting of Board of Directors of Holophane Illuminating Company, Inc., held on September 15, 1925.

A-9. Agreement between Societe Anonyme Francaise and Holophane Glass Company, Inc., dated September 15, 1925.

A-10. Minutes of meeting of Board of Directors of Holophane Glass Company, Inc., held on October 15, 1925.

A-11. Excerpt from minutes of meeting of Board of Directors of Holophane Glass Company, Inc., held on February 9, 1926.

A-12. Excerpts from minutes of meeting of the Board of Directors of Holophane Company, Inc. held on May 5, 1927.

A-13. Letter to Holophane Company, Inc., from Holophane Limited dated October 28, 1927 and attachment (Exhibit A-13a) a letter agreement adressed to H. Hepworth Thompson, Esq., Managing Director, Holophane Limited, Vincent Square, Westminster London, England SW, from Charles Franck of Holophane Company, Inc., dated October 7, 1927.

A-14. Excerpts from minutes of meeting of Board of Directors of Holophane Company, Inc. held on March 8, 1928.

A-15. Minutes of meeting of the Board of Directors of Holophane Company, Inc., held on November 7, 1929.

A-16. Minutes of meeting of the Board of Directors of Holophane Company, Inc. held on November 2, 1933.

A-17. Excerpts from minutes of meeting of the Board of Directors of Holophane Company, Inc. held on September 26, 1935.

A-18. Excerpts from minutes of meeting of the Board of Directors of Holophane Company, Inc. held on November 21, 1935.

A-19. Letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated October 2, 1939.

[fol. 15] A-20. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated October 11, 1939.

A-21. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated October 13, 1939.

A-22. Excerpts from minutes of meeting of Board of Directors of Holophane Company, Inc. held on February 10, 1943.

A-23. Copy of a letter to Mr. A. D. Cameron of Holophane Company, Inc. from Line Material Company, Milwaukee, Wisconsin, dated March 25, 1943.

A-24. Copy of intra-company memorandum entitled "Line Material Distributor's Agreement" dated March 30, 1943.

A-25. Letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated April 12, 1943.

A-26. Copy of a letter to M. C. Harsh of Line Material Company from A. D. Cameron of Holophane Company, Inc., dated April 26, 1943.

A-27. Excerpts from minutes of meeting of Board of Directors of Holophane Company, Inc., held on April 29, 1943.

A-28. Copy of letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated May 19, 1943.

A-29. Letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated June 22, 1943.

A-30. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated July 12, 1943.

A-31. Copy of a letter to Guy Campbell of Holophane Limited from Herbert Smith & Co. of London, England, dated August 5, 1943.

A-32. Letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated August 12, 1943.

A-33. Letter entitled "Agreement No. 1" and marked "Copy for Mr. Franck", to Guy Campbell of Holophane Limited from Joel B. Liberman of Holophane Company, Inc., dated September 13, 1943.

A-34. Letter entitled "Agreement No. 2" and marked "Copy for Mr. Franck," to Guy Campbell, Holophane Limited from Joel B. Liberman of Holophane Company, Inc., dated September 13, 1943.

A-35. Letter to Joel B. Liberman of Holophane Company, [fol. 15a] Inc. from John Sims, dated October 9, 1943.

A-36. Excerpts from minutes of meeting of Board of Directors of Holophane Company, Inc. held on October 21, 1943.

A-37. Copy of a letter to Joel B. Liberman of Holophane Company, Inc. from Charles Franck of Holophane Company, Inc., dated November 7, 1943.

A-38. Letter to Charles Franck of Holophane Company, Inc. from Joel B. Liberman of Holophane Company, Inc., dated November 9, 1943.

A-39. Copy of a letter to Joel B. Liberman of Holophane Company, Inc. from Charles Franck of Holophane Company, Inc., dated November 11, 1943.

A-40. Letter to Charles Franck of Holophane Company, Inc. from Joel Liberman of Holophane Company, Inc., dated November 18, 1943 with attachments consisting of a "Draft Letter" (Exhibit A-40a) and "Extract of Agreement of September 15, 1925" (Exhibit A-40b).

A-41. Copy of a letter to Guy Campbell of Holophane Limited from Joel B. Liberman of Holophane Company, Inc., dated November 26, 1943.

A-42. Agreement between Holophane Limited and Holophane Company, Inc., transferring South American rights, dated February 1, 1944.

A-43. Agreement between Holophane Limited and Holophane Company, Inc., dated February 1, 1944, modifying terms of the agreement between the parties dated September 15, 1925.

A-44. Copy of a letter to Guy Campbell of Holophane Limited from Joel B. Liberman of Holophane Company, Inc., dated February 9, 1944.

A-45. Copy of intra-company memorandum entitled

"Line Material Company", addressed to Mr. Cameron of Holophane Company, Inc. from S. R. Williams of Holophane Company, Inc. dated February 21, 1944.

A-46. Excerpts from minutes of meeting of Board of Directors of Holophane Company, Inc., held on May 11, 1944.

A-47. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated June 2, 1944.

A-48. Letter to Charles Franck of Holophane Company, Inc. from H. Bansback of Holophane Limited, dated August 4, 1944.

A-49. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated October 26, 1944.

[fol. 16] A-50. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated October 27, 1944.

A-51. Letter to Charles Franck of Holophane Company, Inc. from Guy Campbell of Holophane Limited, dated December 29, 1944.

A-52. Letter to Charles Franck of Holophane Company, Inc. from Guy Campbell of Holophane Limited, dated January 9, 1945.

A-53. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated January 26, 1945.

A-54. Contract consisting of five pages between Holophane Company, Inc. and The Art Metal Company entitled "Holophane Lens Lighting Distributors Agreement," dated January 30, 1945.

A-55. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated February 21, 1945.

A-56. Letter to Charles Franck of Holophane Company, Inc. from Guy Campbell of Holophane Limited, dated March 23, 1945.

A-57. Letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated June 11, 1945.

A-58. Letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated July 4, 1945.

A-59. Copy of a letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated April 3, 1946.

A-60. Copy of a memorandum to Clarence Keller of Holophane Company, Inc. from Charles Franck of Holophane Company, Inc., dated April 9, 1946.

A-61. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated April 9, 1946.

A-62. Letter to Joel B. Liberman of Holophane Company, Inc. from Guy Campbell of Holophane Limited, dated July 23, 1946.

A-63. Copy of letter to Holophane Limited from Holophane Company, Inc., dated July 31, 1947.

A-64. Letter to Charles Franck of Holophane Company, Inc., from Edward L. Bodow, Attorney at Law, dated September 12, 1947.

[fol. 17] A-65. Copy of a letter to Dr. S. English of Holophane Limited from Charles Franck of Holophane Company, Inc., dated September 23, 1947.

A-66. Copy of a letter to Mr. M. M. Exelmans, Holophane Company, 156 Boul. Haussmann, Paris, France from Charles Franck of Holophane Company, Inc., dated September 24, 1947.

A-67. Copy of a contract between Holophane Limited and The Societe Anonyme Holophane, dated November 13, 1947.

A-68. Translation of a letter to Holophane Company, Inc., attention of Mr. Rolph, from Exelmans of Societe Anonyme Francaise Holophane, dated November 24, 1947.

A-69. Letter to Charles Franck of Holophane Company, Inc. from Bansback, Director and Secretary of Holophane Limited, dated December 5, 1947.

A-70. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated December 26, 1947.

A-71. Copy of a letter to Mr. C. C. Keller of Holophane Company, Inc. from Holophane Limited, bearing identifying initials "CHB/VR" dated January 5, 1948.

A-72. Letter to Charles Franck of Holophane Company, Inc., 900 N.E. 100 St., Miami 38, Fla., from Joel B. Liberman of Holophane Company, Inc., dated January 9, 1948.

A-73. Memorandum to Charles Franck of Holophane Company, Inc. from Clarence Keller of Holophane Company, Inc. dated January 19, 1948.

A-74. Copy of a memorandum entitled "Holophane Paris Cremer-Pages Patent" to Mr. Rolph from Charles Franck of Holophane Company, Inc., dated January 21, 1948.

A-75. Copy of a memorandum of Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated January 26, 1948.

A-76. Letter to Charles Franck of Holophane Company, Inc., from Bansback, Director and Secretary of Holophane Limited, dated February 27, 1948.

A-77. Copy of a letter to Mr. H. Bansback of Holophane Limited from Charles Franck of Holophane Company, Inc., dated March 5, 1948.

A-78. Copy of intra-company memorandum entitled "Line Material Distributor's Agreement," dated April 14, 1948.

[fol. 18] A-79. Copy of a letter to Mr. C. H. Bansback of Holophane Limited from Charles Franck of Holophane Company, Inc., Dated June 8, 1948.

A-80. Letter to Charles Franck of Holophane Company, Inc. from C. H. Bansback of Holophane Limited, dated June 18, 1948.

A-81. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated July 1, 1948.

A-82. Letter to Charles Franck of Holophane Company, Inc. from Guy Campbell of Holophane Limited, dated July 9, 1948.

A-83. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated July 27, 1948.

A-84. Letter to Charles Franck of Holophane Company, Inc. from Guy Campbell of Holophane Limited, dated August 9, 1948.

A-85. Copy of a letter to Societe Anonyme Francaise Holophane from Charles Franck of Holophane Company, Inc., dated August 30, 1948.

A-86. Copy of a letter to Societe Anonyme Francaise Holophane from Charles Franck of Holophane Company, Inc., dated September 1, 1948.

A-87. Letter to Holophane Company, Inc. from R. B. Sheffer of International General Electric Company, dated September 2, 1948.

A-88. Copy of a letter to Holophane Limited from C. C. Keller, Vice-president in charge of sales of Holophane Company, Inc., dated September 14, 1948.

A-89. Letter to Charles Franck of Holophane Company, Inc. from E. F. Hartert, Export Sales Manager of Line Material Company, Milwaukee, Wisconsin, dated September 17, 1948.

A-90. Copy of a letter to Holophane Limited from C. C. Keller of Holophane Company, Inc., dated September 17, 1948.

A-91. Letter bearing the salutation "Dear Charles" and signed "Joel," with the identification letters JBL/DL, dated September 29, 1948.

A-92. Letter to Mr. J. B. Liberman bearing identification letters CF:DL, dated September 30, 1948.

A-93. Copy of a letter to Mr. E. F. Hartert of Line Material Company from Charles Franck of Holophane Company, Inc., Dated October 1, 1948.

A-94. Copy of a letter to Societe Anonyme Francaise Holophane from Charles Franck of Holophane Company, Inc., dated October 1, 1948.

[fol. 19] A-95. Letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated October 11, 1948.

A-96. Copy of a letter to Societe Anonyme Francaise Holophane from Charles Franck of Holophane Company, Inc., dated October 12, 1948.

A-97. Copy of a letter to Line Material Company, Attention: Mr. E. F. Hartert, from Charles Franck of Holophane Company, Inc., dated October 27, 1948.

A-98. Copy of a letter to Guy Campbell of Holophane Limited from Charles Franck of Holophane Company, Inc., dated October 27, 1948.

A-99. Copy of a letter to Societe Anonyme Francaise Holophane from Charles Franck of Holophane Company, Inc., dated October 28, 1948.

A-100. Copy of a letter to the Line Material Company from Guy Campbell of Holophane Limited, dated November 2, 1948.

A-101. Letter to Charles Franck of Holophane Company, Inc., from Guy Campbell of Holophane Limited, dated November 2, 1948.

A-102. Copy of a memorandum entitled "Line Material Export to Benelux Countries" to Mr. Keller bearing identification letters CF:V, dated November 20, 1948.

A-103. Letter to Charles Franck of Holophane Company, Inc. from E. F. Hartert of Line Material Company dated December 15, 1948.

A-104. Copy of a letter to Holophane Limited from Line Material Company, dated December 15, 1948.

A-105. Copy of a letter to La Societe Anonyme Francaise Holophane from Line Material Company, dated December 15, 1948.

A-106. Copy of a letter to La Societe Anonyme Francaise Holophane from Charles Franck of Holophane Company, Inc., dated December 28, 1948.

A-107. Copy of letter to La Societe Anonyme Francaise Holophane from Charles Franck of Holophane Company, Inc. dated December 28, 1948.

A-108. Copy of a letter to E. F. Hartert of Line Material Company from Charles Franck of Holophane Company, Inc., dated December 28, 1948.

A-109. Letter to Charles Franck, Holophane Company, Inc., from E. F. Hartert of Line Material Company, dated January 3, 1949.

[fol. 20] A-110. Copy of letter to La Societe Anonyme Francaise Holophane from Line Material Company, dated January 24, 1949.

A-111. Letter to Charles Franck, Holophane Company, Inc. from E. F. Hartert of Line Material Company dated January 24, 1949.

A-112. Letter to Charles Franck of Holophane Company, Inc. from Guy Campbell of Holophane Limited, dated January 31, 1949.

A-113. Copy of a letter to Mr. E. F. Hartert of Line Material Company, from Charles Franck of Holophane Company, Inc., dated February 1, 1949.

A-114. Letter to Charles Franck of Holophane Company, Inc., from E. F. Hartert of Line Material Company, dated February 9, 1949.

A-115. Copy of letter to "Monsieur Exelmans, Holophane, 156 Boul. Haussmann, Paris, France," from Charles Franck of Holophane Company, Inc., dated February 19, 1949.

A-116. Copy of a letter to E. F. Hartert of Line Material Company from Charles Franck of Holophane Company, Inc., dated February 21, 1949.

A-117. Memorandum entitled "Foreign Inquiries," to Charles Franck from C. C. Keller, dated February 24, 1949.

A-118. Copy of a memorandum to Mr. Keller of Holophane Company, Inc. from Charles Franck of Holophane Company, Inc., dated March 1, 1949.

A-119. Copy of a memorandum to Charles Franck of Holophane Company, Inc. from C. C. Keller of Holophane Company, Inc., dated March 3, 1949.

A-120. Copy of a letter to "Holophane, 156 Boul. Haussmann, Paris, France," from Charles Franck of Holophane Company, Inc., dated March 28, 1949.

A-121. Copy of a letter to International General Electric Company Schenectady, New York, Attention: Mr. G. H. Gretz, Apparatus Division, from D. Kettels, Sales Department, Holophane Company, Inc., dated March 29, 1949.

A-122. Copy of a letter to Holophane Limited, Attention: Mr. R. J. W. Briddon, from C. C. Keller of Holophane Company, Inc., dated April 8, 1949.

A-123. Copy of a letter to "Holophane Company, 156 Haussmann Blvd., Paris, France," from C. C. Keller of Holophane Company, Inc., dated April 8, 1949.

[fol. 21] A-124. Letter to Charles Franck of Holophane Company, Inc., bearing identification letters GC/LOM, from Holophane Limited, dated April 11, 1949.

A-125. Contract, consisting of eight pages, between Holophane Company, Inc. and Columbia Electric and Manufacturing Company, Inc., entitled "Holophane Lens Lighting Distributor's Agreement," dated April 11, 1949.

A-126. Letter to Holophane Company, Inc., from Holophane Limited, dated February 14, 1950.

A-127. Copy of inquiry to Holophane Company, Inc. from A. T. J. Williams, Blackburn, Victoria, Australia, dated April 9, 1950.

A-128. Copy of inquiry from Ing. Arne Akerback, Linkoping, Sweden, bearing no date.

A-129. Copy of letter to Holophane Limited from Holophane Company, Inc., dated April 18, 1950.

A-130. Copy of inquiry from Haines Food Products, Limited, Wellington, New Zealand, dated May 30, 1950.

A-131. Copy of inquiry to Holophane Company, Inc., from "J. Krasnoselsky, Cons. Engr.," Tel-Aviv, Israel, dated June 12, 1950.

A-132. Copy of statement issued to Holophane Limited by Holophane Company, Inc., dated June 30, 1950.

A-133. Copy of a letter to Holophane Limited from Holophane Company, Inc., dated July 26, 1950.

A-134. Copy of a letter to Holophane Limited from Holophane Company, Inc., dated October 16, 1950.

A-135. Copy of a letter to Holophane Co., 156 Boul. Haussmann, Paris, France, from Holophane Company, Inc., dated November 13, 1950.

A-136. Copy of a letter from Holophane Company, Inc. to Holophane Co., Paris, France, dated December 8, 1950 and copy of enclosure (Exhibit A-136a) from J. Schwab, Strasbourg, dated November 17, 1950.

A-137. Copy of a letter from Holophane Company, Inc. to "Holophane Company," Paris, France, dated December 13, 1950.

[fol. 22] A-138. Copy of inquiry from M. G. Harvey, Lemon Street, New Plymouth, New Zealand, dated December 19, 1950.

A-139. Copy of inquiry from Mahdi Husain Haj Ali, Rashid St. Bab El Agha, Baghdad, dated January, 1951.

A-140. Copy of inquiry from the Continent Trading Company, Teheran, Iran, dated January 8, 1951.

A-141. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated January 22, 1951.

A-142. Copy of letter to Holophane Limited from Holophane Company, Inc., dated March 19, 1951.

A-143. Copy of a letter from Holophane Company, Inc. to Holophane Company, Paris, France, dated May 7, 1951, and copy of enclosure (Exhibit-143a) from Hans F. Thum, dated March 23, 1951.

A-144. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated May 7, 1951 and copy of enclosure (Exhibit A-144a) from J. Moulchly and Sons, dated April 25, 1951.

A-145. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated May 21, 1951.

A-146. Letter from International General Electric Company, Inc. to Holophane Company, Inc., dated May 31, 1951.

A-147. Copy of a letter from Holophane Company, Inc. to International General Electric Company, Inc., dated June 5, 1951.

A-148. Letter from Holophane Limited to Holophane Company, Inc., dated June 5, 1951.

A-149. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated June 12, 1951 and copy of enclosure (Exhibit A-149a) from Upper Ganges Valley Electricity Supply Company Limited, dated "23-4-51."

A-150. Contract consisting of one page between Holophane Company, Inc. and O. R. Evans and Bro., Inc., entitled "Holophane Distributing Jobbers' Agreement," dated July 1, 1951.

A-151. Copy of letter to Holophane Limited from Holophane Company, Inc., dated August 2, 1951.

[fol. 23] A-152. Letter to Holophane Company, Inc., from Holophane Limited, dated August 10, 1951.

A-153. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated September 4, 1951 and copy of enclosure (Exhibit A-153a) from George W. Lambert, dated August 15, 1951.

A-154. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated September 11, 1951.

A-155. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated September 25, 1951 and copies of enclosures from C. H. Morgan, dated September 11, 1951 (Exhibit A-155a) and from S. Doo, dated September 11, 1951 (Exhibit A-155b).

A-156. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated October 10, 1951.

A-157. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated October 15, 1951 and copy of enclosure (Exhibit A-157a) from Norsk Hydro-Elektrisk Kvaelstofaktieselskab, Oslo, Norway, dated October 2, 1951.

A-158. Copy of letter to Holophane Limited from Holophane Company, Inc., dated October 24, 1951,

A-159. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated October 30, 1951.

A-160. Copy of a letter from Holophane Company, Inc. to Holophane Company, Paris, France, dated December 5, 1951 and copy of enclosure (Exhibit A-160a) from Leo Schevenhels, dated October 15, 1951.

A-161. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated December 5, 1951 and copy of enclosure (Exhibit A-161a), from L. B. Wright, dated "11-19."

A-162. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated December 12, 1951 and copy of enclosure (Exhibit A-162a) from King Edwards' Hospital Fund for London.

A-163. Copy of a letter from Holophane Company, Inc. to Holophane Limited, dated December 31, 1951.

A-164. Copy of letter to Holophane Limited from Holophane Company, Inc., dated January 3, 1952.

[fol. 24] A-165. Copy of a letter addressed to Line Material Company, Milwaukee, Wisconsin, dated August 3, 1948.

A-166. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated August 6, 1948.

A-167. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated September 1, 1948.

A-168. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated September 15, 1948.

A-169. Copy of a letter addressed to Line Material Company, Milwaukee, Wisconsin, dated January 10, 1949.

A-170. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated January 10, 1949.

A-171. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated February 11, 1949.

A-172. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated February 24, 1949.

A-173. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated March 15, 1949.

A-174. Letter from Societe Anonyme Francaise Holophane to Holophane Company, Inc., dated April 6, 1949.

A-175. Letter to Holophane Company, Inc. from Holophane Limited, dated November 12, 1948.

II. That each of the documents listed below, in this paragraph II, copies of which are exhibited with this Request, is an accurate English translation of the exhibit indicated: Exhibit No.

T-1. Translation of Exhibit A-165.
T-2. Translation of Exhibit A-166.
T-3. Translation of Exhibit A-167.
T-4. Translation of Exhibit A-168.
T-5. Translation of Exhibit A-169.
T-6. Translation of Exhibit A-170.
T-7. Translation of Exhibit A-171.
T-8. Translation of Exhibit A-172.
[fol. 25] T-9. Translation of Exhibit A-173.
T-10. Translation of Exhibit A-174.

III. That each of the following statements is true:

1. The defendant, Holophane Company, Inc., was founded in 1898 as Holophane Glass Company, Inc.

2. Holophane Glass Company, Inc. was organized to engage in the business of manufacturing and selling new forms of prismatic glass globes and reflectors in the United States.

3. In about 1911 or 1912 the General Electric Company acquired exclusive rights to the sale of all products of the Holophane Glass Company, Inc., in the United States.

4. The General Electric Company marketed said products first under the name of the Holophane Works of General Electric Company, and later as the Ivanhoe Division of General Electric Company.

5. After approximately four years, General Electric Company relinquished the aforesaid rights.

6. From about 1916 to 1925 Holophane Glass Company, Inc. was under the management of Charles Franck.

7. The aforementioned Charles Franck is the present president and general manager of the defendant, Holophane Company, Inc.

8. In 1925, a group of executives, engineers and employees of the Holophane Glass Company, Inc., under the leadership of the aforementioned Charles Franck and Joel

B. Liberman, attorney for Holophane Glass Company, Inc., organized the Holophane Illuminating Company, Inc.

9. The aforementioned group of executives, engineers and employees comprised the persons then actively engaged in the management, sales, research and manufacturing activities of the Holophane Glass Company, Inc.

10. The aforesaid Holophane Illuminating Company, Inc., was organized for the purpose of purchasing all of the outstanding shares of stock in the Holophane Glass Company, Inc.

11. At the time of the formation of the Holophane Illuminating Company, Inc. all of the aforesaid outstanding shares of stock were held by Holophane Limited of London, England.

[fol. 26] 12. After consummation of the aforesaid sale, Holophane Illuminating Company merged with Holophane Glass Company, Inc.

13. After merger, the aforesaid companies operated under the name Holophane Glass Company, Inc.

14. In 1926 the name of Holophane Glass Company, Inc. was changed to Holophane Company, Inc., the defendant in this action.

15. In 1925 there were many countries in the world in which neither the Holophane Glass Company, Inc., Holophane Limited nor Societe Anonyme Francaise Holophane, Paris, France, carried on business.

16. In 1925 there were other countries in the world in which the aforesaid companies made only occasional or isolated sales of their products.

17. At the present time there are a number of countries in the world where neither Holophane Company, Inc., Holophane Limited nor Societe Anonyme Francaise Holophane has ever made any substantial effort to develop a market for its products.

18. At the present time there are a number of countries in the world where neither Holophane Company, Inc., Holophane Limited nor Societe Anonyme Francaise Holophane has any patent, trade mark or trade name protection.

In 1925 Holophane Glass Company, Inc. was not doing business in any of the areas listed below: (admit separately as to each of the areas listed)

19. The Empire of Japan.

20. The Republic of Cuba.
21. Philippine Islands.
22. Central America excluding Mexico.

The Holophane Company, Inc. has made only occasional, isolated or no sales in each of the areas listed below: (admit separately as to each of the areas listed)

23. The Empire of Japan.
24. The Republic of Cuba.
25. Philippine Islands.
26. Central America excluding Mexico.

Holophane Company, Inc., at the present time, does not have any patent, trade mark or trade name protection in any of the areas listed below: (admit separately as to each of the areas listed)

[fol. 27] 27. Empire of Japan.
28. Republic of Cuba.
29. Philippine Islands.
30. Central America excluding Mexico.
31. Bolivia.
32. Paraguay.
33. Colombia.

Holophane Company, Inc. has never made any substantial effort to develop a market for the sale of its products in: (admit separately as to each of the areas listed)

34. Empire of Japan.
35. Republic of Cuba.
36. Philippine Islands.
37. Central America excluding Mexico.
38. Bolivia.
39. Paraguay.
40. Colombia.

In 1925 Holophane Limited was not doing business in any of the areas listed below: (admit separately as to each of the areas listed)

41. Greece.
42. Turkey.
43. Iran.

44. Iraq.
45. Arabia.
46. Palestine.
47. Lebanon.
48. Syria.
49. The Baltic States.
50. China.
51. Thailand.
52. Africa.
53. Russia.
54. Finland.
55. Luxembourg.

[fol. 28] Holophane Limited has made only occasional, isolated or no sales in any of the areas listed below: (admit separately as to each area listed)

56. Greece.
57. Turkey.
58. Iran.
59. Iraq.
60. Arabia.
61. Israel.
62. Lebanon.
63. Syria.
64. The Baltic States.
65. China.
66. Thailand.
67. Africa.
68. Russia.
69. Finland.
70. Luxembourg.

Holophane Limited has never made any substantial effort to develop a market for the sale of its products in any of the areas listed below: (admit separately as to each area listed)

71. Greece.
72. Turkey.
73. Iran.
74. Iraq.
75. Arabia.

76. Israel.
77. Lebanon.
78. Syria.
79. The Baltic States.
80. China.
81. Thailand.
82. Africa.
83. Russia.
84. Finland.
85. Luxembourg.

[fol. 29] 86. Exhibit No. A-165, listed in paragraph I of this Request, was sent to Holophane Company, Inc. by Societe Anonyme Francaise Holophane as a copy of a letter sent by the latter company to Line Material Company.

87. Exhibit No. A-169, listed in paragraph I of this Request, was sent to Holophane Company, Inc. by Societe Anonyme Francaise Holophane as a copy of a letter sent by the latter company to Line Material Company.

88. Exhibit No. A-91, listed in paragraph I of this Request, is a letter to Charles Franck of Holophane Company, Inc. from Joel B. Liberman of Holophane Company, Inc.

89. Exhibit No. A-92, listed in paragraph I of this Request, is a letter to Joel B. Liberman of Holophane Company, Inc. from Charles Franck of Holophane Company, Inc.

90. Exhibit No. A-102, listed in paragraph I of this Request, is a memorandum to C. C. Keller of Holophane Company, Inc. from Charles Franck of Holophane Company, Inc.

91. As of November 10, 1949, Holophane Company, Inc. had contracts with approximately twelve companies containing export provisions identical to those in the clause entitled "Territory" on page one of the contract listed in paragraph I of this Request as Exhibit A-54.

92. As of November 10, 1949, Holophane Company, Inc. had contracts with approximately six companies containing export provisions identical to those in the clause entitled "Territory" on page one of the contract listed in paragraph I of this Request as Exhibit A-125.

93. As of November 10, 1949, Holophane Company, Inc. had contracts with approximately forty-two companies con-

taining export provisions identical to those in the clause entitled "Export" in the contract listed in paragraph I of this Request as Exhibit A-150.

[fols. 30-45] Robert B. Hummel, Norman H. Seidler, Harry E. Pickering, Attorneys for the United States.

CERTIFICATE OF MAILING (Omitted in Printing)

[fol. 46] EXHIBIT A-10

Minutes of a Regular Monthly Meeting of the Board of Directors

The regular monthly meeting of the Board of Directors of Holophane Glass Company, Inc. was held at the office of the company, 342 Madison Avenue, New York, N. Y. on the 15th day of October, 1925 at 9:45 A. M. There were present:

Messrs: John G. Jackson, Helmuth M. Kiesewetter, Charles Franck, Joel B. Liberman.

The President, Mr. Jackson, called the meeting to order and acted as chairman.

Mr. Liberman was appointed Secretary of the meeting.

The Minutes of the last meeting of the Board of Directors held on the day of September, 1925 were read and approved.

The resignation of Mr. Barringer as Director was presented and accepted, and the same was ordered placed on file.

Mr. Franck presented the name of Mr. Otis A. Mygatt, a stockholder in the company, to take the place of Mr. Barringer, resigned, and thereupon Mr. Mygatt was unanimously elected by the board to succeed Mr. Barringer.

The resignation of Mr. Barringer as Secretary of the company was also presented and accepted and ordered to [fol. 47] be placed on file. Thereupon Alma L. Rustin was chosen to be the secretary of the company to succeed Mr. Barringer.

The resignation of Mr. Jackson as president was presented to the board and on motion duly made, seconded and

carried such resignation was accepted and ordered to be placed on file. Mr. Franck (Mr. Jackson having ceased to preside) took the chair and presided for the remainder of the meeting.

Thereupon Mr. Kiesewetter presented the name of Mr. Otis A. Mygatt as president to succeed Mr. Jackson, resigning, and upon motion duly made, seconded and carried Mr. Mygatt was unanimously elected President of the company, and the Secretary was ordered to notify Mr. Mygatt of his appointment as Director and election as President.

A discussion of the financial position of the company followed and Mr. Franck presented the question of the proper method of handling the $100,000 by the Bank of New York and Trust Company to the company in view of the large deposit in that bank and also of certain excess funds in the Equitable Trust Company. On motion duly made, seconded and carried Messrs. Frank and Liberman were authorized to inquire if the bank would not consent to a uniform deposit less in amount than the present deposit and if so, whether the excess above the minimum deposit required may be applied to the purchase of Liberty Bonds and placed with the bank as additional security.

Mr. Franck was further authorized to apply $25,000 of the amount now on deposit with the Equitable Trust Com-
[fol. 48] pany to the reduction of the aforesaid loan or to the purchase of Liberty Bonds in that amount for the account of the company.

Mr. Jackson requested that a general monthly report of the financial condition of the company be sent to him to transmit to Mr. Mygatt and the same was authorized. The question whether Mr. Mygatt's salary was to be applied against engineering or expense was discussed and on motion duly made, seconded and carried it was decided to charge the same against expense.

Upon motion of Mr. Jackson duly seconded and carried the action of the officers in signing the patent exchange and manufacturing agreement between Holophane Limited of London and the company dated September 15th, 1925 was duly ratified and a copy of such agreement was ordered to be placed in the minutes of the company.

On motion of Mr. Jackson, duly seconded and carried the

officers were authorized to execute a similar agreement with the Holophane Cie. of Paris, France.

Mr. Liberman stated that the Equitable Trust Company had objected to that feature of special account No. 2 and the Salary Account (single signature accounts) which provides that no check in excess of $2000 and $3000, respectively, was to be paid, on the ground that this interferes with a rule of the bank and suggested that the signature of another employee in the service of the company be added to the single signature required on such accounts, instead of the safeguard included in the resolution. It [fol. 49] was the concensus of opinion, however, that for the time being that no change be made in the original resolution.

The question of contracts with the following: Charles Franck; Joel B. Liberman; Edward L. Bradbury; William A. Dorey; William A. Ingler; and Howard L. Jenkins, was discussed and it was thought advisable to have these contracts ready as soon as possible along the lines of memoranda submitted to Mr. Jackson, a model copy of such contract to be sent each of the Directors.

Mr. Irving B. Ferguson was thereupon introduced to the meeting and a general discussion ensued concerning the accounting system to be followed by the company and Mr. Ferguson was retained at a salary of $1200 a year as supervising accountant of the company.

There being no further business to come before the meeting, it was regularly moved and seconded that they adjourn.

Joel B. Liberman, Acting Secretary.

[fol. 50] EXHIBIT A-12

Excerpt from Minutes of a Regular Monthly Meeting of the Board of Directors

The regular monthly meeting of the Board of Directors of the Holophane Company, Inc., was held at the office of the company, 342 Madison Avenue, New York City, on Thursday, May 5th, 1927 at 4:15 o'clock. There were present:

Messrs. Charles Franck, Joel B. Liberman, Helmuth M. Kiesewetter, J. Louis VanZelm, Alma L. Rustin, Secretary.

The minutes of the meeting of February 8th, 1927 were read and approved.

Thompson settlement: Mr. Liberman reported that the action of Justin Manning, as assignee of the accrued portion of H. Hepworth Thompson's commission under his contract with the company, has been tried and decided against the company and judgment entered for about $22,000 at White Plains, N. Y. Inasmuch as the decision under what is virtually one-half of the Thompson action had gone against the company it was the concensus of opinion of the directors at various informal meetings that the overtures of Mr. Thompson's attorney for a settlement should be met and accordingly a settlement of $31,000 in cash was agreed to and paid. Mr. Liberman also reported that releases from Manning and Thompson had been exchanged with the company covering any and all actions which Mr. Thompson might have had or could have against the United States and the Canadian company. On motion duly passed it was

Resolved that the action of the directors and officers in affecting the compromise and the payment of the aforesaid $31,000 to the Thompson interests in full settlement of his claim be ratified and approved and that the secretary be requested to place the settlement papers in the company's safe. In order to keep a reasonable balance at the banks it was necessary to sell $10,000 of the Liberty Bonds on deposit with the Equitable Trust Company, the rest of the sums necessary for the settlement having been taken from that account as well.

International Holophane Convention: Mr. Franck reported that an invitation has been received to attend an International Holophane convention to be held at London about June 7th and 8th and it was the general opinion that it would be advisable for Mr. Franck to attend that convention in the interests of the company.

[fol. 51] EXHIBIT A-18

Excerpt from Minutes

Holophane Company, Inc.

Minutes of a meeting of the Board of Directors held at the office of the company, 342 Madison Avenue, New

York City, on the 21st day of November, 1935 at 9:30 A. M.

Present: Charles Franck, Joel B. Liberman, John G. Jackson, Stuart R. Reed, Helmuth M. Kiesewetter, being all of the directors of the company.

There were also present A. D. Cameron, by invitation and Alma L. Rustin, Secretary.

The President of the company, Mr. Franck, called the meeting to order and acted as Chairman and Miss Rustin, acted as Secretary.

The minutes of the Directors meeting held September 26th, 1935 were read and approved.

Mr. Franck reviewed the general business conditions of the company and also gave an informal report concerning the progress of the Canadian company and the Verlys interests.

Mr. Liberman reported that a lens unit alleged to infringe on patent of Kirby, Inc., (L. X. Champeau No. 1,746,852 dated February 11th, 1930) was being marketed by Electric Equipment Company and that conferences had been had with Mr. Kirby and Kirby, Inc. had determined to bring an action for infringement of that patent against the Electric Equipment Company. He also stated that the advertisements of the Electric Equipment Company used the word "Controlens" and that this was a trade mark owned by the Holophane Company, Inc. The officers were directed to cooperate with Mr. Kirby with reference to the proposed patent infringement suit and to bring an action in connection with infringement of the trade mark "Controlens".

Holophane Ltd. Shares: Mr. Franck reported concerning the advisability of acquiring the shares of Mr. and Mrs. Mygatt in Holophane Ltd. of London and certain other shares of that company. On motion duly made, seconded and carried, it was

Resolved that the officers be authorized to submit an offer to purchase such English shares on the following terms: 75% of the outstanding British shares to be purchased for a consideration to be contributed in equal third parts by (a) Holophane Cie. (of Paris), (b) Benjamin Electric, Ltd. (of London) and Holophane, Inc. (U.S.A.); [fol. 52] Cash outlay $100,000; O. A. Mygatt to be guaran-

teed a payment of £1000 per annum and a further sum if earned and from dividends of the British company of £1800 per annum.

Mr. Franck reported that the strike at the factory had been settled.

Redemption of Preference Shares: The Treasurer reported that in conformity with the resolution passed at the previous Board meeting the Secretary had been authorized to send the following letter to preference stockholders:

[fol. 53] EXHIBIT A-37

Mr. Liberman, South America

November 7, 1943

DEAR JOEL:

In reply to yours of the 3rd, I reviewed first of all your letter of September 13 which, to say the least, proposed very few, most reasonable changes in the agreements submitted by Holophane Ltd. I remember very well that I read this letter in a great hurry as you wished to mail it the same day and naturally having full confidence in your legal advice felt that it was so modest in its few demands that it should have afforded the British company particular pleasure to conform with our wishes as expressed in your letter.

Now Guy Campbell in his letter of October 12 to me just refers to Mr. Sims' letter to you and says, "I would like to confirm that we have complied with all the points raised so far as conditions and circumstances permit." That is not so as for instance in the case of Fees or Out-Of-Pocket Expenses in connection with the assignment and trade mark patent rights. You suggested that this cost be borne equally by the two companies. Mr. Sims turns this down in referring to the June 1925 agreement wherein the British company purchased the rights from the American company. He again refers to this agreement in the next paragraph of the letter with regard to the Covenant of Warranty or full guarantee on their part, which as you term it would ordinarily pass.

I wish to take definite exception to this comparison and to be brutally frank about it, this old Thompson agree-

ment is just like "waving the red flag before the bull" when it comes to my feelings in the matter. Without wishing to exaggerate the conditions under which this agreement was made, it reminds me, to speak in present terms, somewhat of the Nazi terms laid down to occupied territories. We had nothing to say or, rather, all my objections against the terms of this agreement were purely and simply over-ridden in an arbitrary way by Thompson, representing the English company. He dictated the terms as a conqueror these days does, contrary to what the United Nations consider as fair and equitable decisions.

You say in your letter to me that in the main the newly embodied changes are satisfactory to you, but you intend to call attention in your letter to Guy to the two points on which they should have agreed. It is my feeling that if they should have agreed, they shall agree, even if you say that they are purely academic. This is not entirely so, particularly on the point of paying out-of-pocket expenses, even if the amount is small. If we were asking anything unreasonable, I would be the first one to withdraw but as long as you feel that they should have agreed, they must.

To refresh my memory again on the subject, I would like you to advise me of the high points of the French agreement referred to under Paragraph 9, Page 5 of Contract No. 1. My mind is not very clear any more on [fol. 54] this, and I wonder in how far we are endangered by this agreement in having the French company, if and when it again functions, interfere with our exclusive South American rights in any way, shape or form. Nobody can tell at this moment what the French company setup will look like after the war. Maybe there will be other people in it from those we knew. Perhaps the business has been sold by force to German interests, and we do not know yet what terms might possibly be imposed by the victorious United Nations to throw such German owners out.

I would also like to review, although I called it the "red flag" before, the agreement of June 1925 between the English and American companies.

The other point, already mentioned above, as to their guarantee or warranty is, in my opinion, one that if we are right we should insist upon it.

A further point, with reference to information to put us in position to do business in South America, as expressed in Paragraph 6 and 7, Page 4 of Contract No. 1 is one on which I further feel that we should not give in and be satisfied with the wording as Paragraph 6 stands now, although I admit that Paragraph 7 gives us some relief. I believe we should receive, particularly, correspondence files dating back to January 1, 1937 in copy or original as Ltd. chooses, or all transactions with either customers or Ltd.'s own representative, whose name I have forgotten, with whom I believe they finally had difficulties and who ultimately went over to Lix Klett. The very least I could feel satisfied with would be an assurance as part of the contract that the English company would send us, at any time after consummation of the agreement, copies of all files upon request, somewhat in line with sentence in Paragraph 4, Page 8 of Contract No. 2, such as: The English company shall at the request of the American company provide full details or any correspondence had after January 1, 1937 in connection with South American business.

By the way, under paragraph 4, Page 2 of the preamble of contract No. 1, there seems to be some words missing after "trade marks and trade names." I believe the words missing are "including the trade mark or trade name Holophane."

By the way, in line with what I said of the French company, can you foresee any complications by some not Holophane Ltd. controlled but concern friendly to them in which they might be financially interested to make any connections or to attempt doing any business in South America harmful to our exclusive rights? It is probably too late now but perhaps we should have included some phraseology saying that the English company will keep directly or indirectly entirely out of business contacts in [fol. 55] said territory pertaining to lighting and allied industry.

Don't think that I am trying to throw a monkey wrench into this, although I am willing to admit that perhaps I am not as keen today as I was some months ago on this whole scheme after getting all kind of information indi-

cating the difficulty and the doubt of being able to conduct a profitable business in South America.

What guides me in the aforesaid position taken is that I do not wish for the second time to make an agreement and pay, in my opinion, a reasonably good price for it unless it is in accordance with good legal practice and covers us thoroughly. I also might mention that I am under the impression, which is to some extent confirmed in Sims' letter, that Guy's main interest turns around the disclosure of full information as provided in Clause 4 of Agreement 2.

I have carefully studied, as I think you did, the English minutes on post-war developments and minutes on their recent sales conference which they held in August. I am in my own mind satisfied that they need, particularly in technical development, but also in commercial Holophane experience a great deal of help that we have already given unstintingly and would no doubt continue most willingly in the future subject to the temporary limitations on manufacturing secrets, etc., and that Guy knows the value of this to the English company. After all, these developments of ours cost a great deal of money, and in all the years that I can think back, I don't remember a single case where we could make practical use of any English development.

I first thought I would phone you but felt that it would be easier to deal with this situation by trying to put my thoughts on paper, and shall be glad to hear further from you.

CF:V

Ps. Don't think this letter just expresses rash thoughts. I refrained from answering for several days to think it over. I am not blowing hot and cold. As you know from past experience I resent not being treated eminently fair because that is the way we treated them in the entire negotiations conducted so far.

How comes that the schedule attached to contract No. 1 cites "International—includes Cuba & Mexico" for trade mark "Holophane"; thought this mark for Cuba & Mexico already belonged to us.

[fol. 55A] CLERK'S NOTE

Exhibit A-112 called for by Stipulation of Counsel was not in the record and after diligent search by counsel cannot be located.

[fol. 56] EXHIBIT A-134

AIR MAIL

October 16, 1950

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, SW. 1.,
England

Gentlemen:

We are forwarding you herewith several inquiries, received for Holophane literature, requested by customers in the territories you serve.

These are forwarded to you herewith for further handling by you.

Very truly yours, Holophane Company, Inc., Export Manager.

GGRae/ap
ee
Enc.

[fol. 57] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

SWORN STATEMENT DENYING CERTAIN ITEMS IN REQUEST FOR ADMISSIONS—Filed May 19, 1952

STATE OF NEW YORK,
County of New York, ss.:

LEWIS HORWITZ, being duly sworn: I am a member of the firm of Broad & Cassel, attorneys for the defendant. I have made diligent enquiry to ascertain the truth or falsity of the matters set forth in the Plaintiff's Request

for Admissions, and the following statements are to the best of my knowledge, information, and belief:

Item III,(6), contained in the plaintiff's request for admission is not true. From about 1916 to 1925 Holophane Glass Company, Inc. was under the management of H. Hepworth Thompson, Managing Director of Holophane Limited, London, England.

Item III(10), is incorrect. Holophane Illuminating Company, Inc. was organized for the purpose of purchasing all of the assets in the Holophane Glass Company, Inc. rather than for the purpose of purchasing all of the outstanding shares of stock.

Item III(11), is incorrect. At the time of the formation of the Holophane Illuminating Company, Inc. all of the outstanding shares of stock of Holophane Glass Company, Inc. were held by Holophane Limited of London, England.

Item III(14), is incorrect. It is true that in 1926 the name of Holophane Glass Company, Inc. was changed to Holophane Company, Inc. The Holophane Company, Inc. of 1926 was not the same corporation as the defendant in this action. The defendant in this action was incorporated [fol. 58] in 1929 and in that year a certificate of merger by such Defendant and the Holophane Glass Company was duly filed.

With regard to Items III(19, 20, 21 and 22), it is not known by myself or any other present official of the defendant whether or not Holophane Glass Company, Inc. in 1925 was or was not doing business with any of the countries enumerated in these items. If any business was done, however, it consisted of a few isolated sales.

With regard to Items III(27, 28, 29, 31 and 33) Holophane Company, Inc. at the present time does have trademark or trade name protection in the areas listed in those items.

With regard to Items III(35, 36, 37, 38, 39 and 40), Holophane Company, Inc. has made efforts to develop a market for the sale of its products in the countries enumerated in those items.

With regard to Items III, (41 through 55 inclusive), it is now known whether or not Holophane Limited was or

was not doing business in any of the areas listed in those items in 1925.

With regard to Items III (56 through 70 inclusive), it is now known whether or not Holophane Limited has made occasional, isolated, or no sales in any of the areas listed in those items.

With regard to Items III (71 through 85 inclusive), it is now known whether or not Holophane Limited has made any substantial effort to develop a market for the sale of its products in any of the areas listed in those items.

With regard to Exhibit Nos. T-5 and T-6 in Item II, T-5 is a translation of Exhibit A-170, and T-6 is a translation of Exhibit A-169.

[fol. 59] In some of the items under III, the words "aforementioned" and "aforesaid" are used. The defendant has denied some items to which these words refer and admissions are therefore not deemed to include the use of those words.

S. (Lewis Horwitz).

Duly sworn to by Lewis Horwitz. Jurat omitted in printing.

[fols. 60-61] Affidavit of Service by Mail (omitted in printing)

[fol. 62] In United States District Court

Opening Statement on Behalf of the Plaintiff

Mr. Seidler: If the Court please, we have a short statement to make to set forth the facts that will be sought to be proven.

The defendant, Holophane Company, Inc., is charged with being a party to illegal contracts with and combining and conspiring with two co-conspirators to restrain the foreign trade of the United States in violation of Section 1 of the Sherman Act. The co-conspirators are named as Holophane Limited, an English joint stock company located

in London, England, and La Societe Francaise Holophane, a French corporation located in Paris, France.

There is no dispute as to the jurisdiction of this court nor the fact that the defendant is engaged in interstate and foreign commerce.

It is not denied that the defendant transacts business and maintains a factory within the jurisdiction of this Court. It is not denied that the defendant has sold and shipped its products from its factory in Ohio to customers located in other states and territories of the United States and subject to the limitations alleged to customers located in foreign nations.

The Government brings this action to prevent continuing violations by the defendant of Section 1 of the Sherman Act. The pertinent provisions of this section provide that [fol. 63] every contract, combination or conspiracy in restraint of trade with foreign nations is illegal.

The complaint alleges violations of this section in two respects: First, that the defendant and the co-conspirators have combined and conspired to suppress and eliminate competition among themselves and with others in all markets of the world in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware.

Second, that the defendant and the co-conspirators have been and are now parties to unlawful contracts and agreements which restrain the foreign trade of the United States in this product.

As to the product of the defendant and co-conspirators:

It is not contested that prismatic glassware consists of glass in the form of reflectors, refractors and lenses which bear configurations or prisms in the form of lines or circles. As the light passes through the glass these prisms bend the rays so that the light may be concentrated to a small area or diffused over a large area. When this glass is incorporated into illuminating appliances it provides a highly efficient and effective means of controlling the distribution and direction of artificial light. Such lighting appliances are widely used in institutions such as schools and hospitals; commercial buildings, such as stores and offices; in-

dustrial structures such as factories and warehouses; and [fol. 64] in street and traffic lighting fixtures.

The defendant does not deny that it manufactures substantial quantities of such prismatic glassware for use in illuminating appliances for these purposes and it has long been active in engineering, developing and extending the use of such appliances. In 1948 defendant's gross sales of prismatic glassware and illuminating appliances containing prismatic glassware were in excess of three million dollars.

If your Honor please, the facts in this case are relatively simple. The defendant and the co-conspirators are parties to a series of agreements, contracts, and understandings which fully and effectively regulate their export and import trade. These agreements have, over the course of many years, been modified and elaborated upon, but the basic contracts are the so-called trading agreement between the defendant and Limited which was entered into in 1925 and the trading agreement between the defendant and Francaise which was entered into in 1926. Neither of these agreements contains any termination date. Relations between Limited and Francaise are governed by a patent license from Limited to Francaise in certain countries of Europe and this license, over the course of the years, has been continuously renewed.

Two basic objectives are evident from a reading of the agreements. First, to suppress and eliminate all competition among the parties in all markets of the world and, [fol. 65] second, to help each other in meeting and combating the competition of outsiders.

An examination of the agreements leaves no question but that they establish a typical cartel. They provide for the restrictive and reciprocal help devices which are the marks of cartel arrangements. First, the world is divided into exclusive trade territories. The territory of the defendant is all of North America, north of the Panama Canal, the Republic of Cuba, the Philippine Islands, and the Empire of Japan.

The territory of Francaise is the Republic of France and its colonies.

The territory of Limited is the rest of the World.

Over the course of years, countries have been shifted

from the territory of one party to the territory of another so that at the time of the filing of this complaint, South America was included in the territory of the defendant and certain countries of Europe were reserved to Francaise.

Next, each party then agrees it will use every means in its power to prevent the exportation by anybody of any product manufactured or sold by it into the territory allocated to the others.

By this means, the parties not only refrain from competing among themselves, but they prevent the potential competition which can be expected from each other's customers. For example, a customer of the defendant who, in manu- [fol. 66] facturing a lighting fixture, utilizes glass purchased from the defendant will be prevented from shipping that fixture into the markets of the world which are reserved either to Limited or Francaise.

Next, the parties agree to a mutual exchange of all patents, trade-marks, and trade names, and in a later agreement, Limited and the defendant agree to an exchange of commercial and industrial know-how; that is, the technical information dealing with the product and commercial information dealing with its marketing.

In conjunction with this exchange, each party is required to provide to the others the papers and information necessary for them to secure and defend the patent, trade-mark, and trade name protection in their respective territories. As a further part of the arrangement, all inquiries which emanate from, or orders which will result in shipments to, the territory of another party must be referred to that party.

For example, there are many companies located in the United States which purchase products here for export shipment. If such a company placed an order with the defendant intending to export to, say, Turkey, a country in the territory of Limited, the defendant would be obliged to reject the order and to refer the customer to Limited. Further, if, under these circumstances, Limited does not manufacture the product which was ordered, the defendant [fol. 67] would ship it, but, in accordance with the instructions which it received from Limited and for the profit of Limited.

By these means the defendant and the co-conspirators pool their resources to combat the competition of outsiders. Each gains the advantage of the skills and techniques of the others in this highly technical business. And each is assured that any business in the market which it owns will come to it irrespective of which company receives the order or inquiry.

I shall not attempt at this point to work out all of the details which result in this finished cartel pattern. The evidence will demonstrate that the pattern is a perfect one. It overlooks no opportunity to regulate and eliminate the avenues of competition among the parties. The restraints are all inclusive. Territories of the world are arbitrarily reserved to the respective parties with no reference to whether they traded in that area before or whether they trade in that area now, or whether they have or have not patent or trademark protection in that area. Restraints apply to new and undeveloped markets in which none of the parties have previously traded. The restrictions will apply to products that they may develop in the future. The restraints apply to any product manufactured or sold by the parties, and it makes no difference whether the product is patented or unpatented, trade-marked or untrade-marked. In short, nothing goes out and nothing comes in to the pro- [fol. 68] tected markets of the parties unless it is with the permission and for the benefit of the party who owns the market.

The result of these agreements, and the adherence of the parties to these agreements, has been that the imports into the United States and the exports from the United States of all of the products manufactured or sold by these parties have been unreasonably restrained.

It is well established that agreements to divide world markets which affect the foreign commerce of the United States violate Section 1 of the Sherman Act. This proposition is so well established that Judge Rifkind in the National Lead case, 63 Federal Supplement 513, at Page 523, could state:

"No citation of authority is any longer necessary to support the proposition that a combination of competitors which by agreement divides the world into exclusive trade

areas and suppresses all competition among the members of the combination offends the Sherman Act."

If your Honor please, in the present case, the Holophane Company is charged with violating Section 1 of the Sherman Act. With respect to Section 1, the Supreme Court in the Yellow Cab case, 332 U. S. 218, emphasized, at Page 225, that the amount of trade affected by the conspiracy is immaterial in determining whether a violation of the Sherman Act has occurred. Section 1 outlaws unreasonable restraints on commerce regardless of the amount of commerce [fol. 69] affected, and equally irrelevant is the importance of the commerce affected in relation to the entire amount of that commerce. I quote: "The Sherman Act is designed to sweep away all appreciable obstructions so that the statutory policy of free trade might be effectively achieved."

Against this absolute, comprehensive, and complete restriction upon the foreign commerce of the United States, the only affirmative defense raised in defendant's answer is that these agreements were ancillary to the sale of a going business. In other words, that the restraints were necessary to protect the good will of the business sold. The defendant argues that because a business was sold in 1925, Limited as the seller and the defendant as the buyer, and somehow or other the French company—which was neither a buyer nor a seller—had the legal right to set up a world-wide cartel—to enter into these three-party, restrictive, reciprocal help agreements.

The evidence will reveal that the stock of the American company was purchased from Limited in 1925 by a group of executives, engineers, and employees who were at that time actively engaged in the operation of the American company.

The 1925 agreement was entered into on the occasion of —at the time—of this sale. But none of the agreements among the parties can be considered as being truly ancillary to that sale, for the evidence will reveal that they had an objective which was not related to this sale, but rather were [fol. 70] designed to effectuate the cartel arrangement itself. In other words, these agreements were not subordinated to nor measurable by the circumstances of the sale. Rather than providing for the bare Limited restraint neces-

sary for the protection of the good will of the business which was sold, these agreements were designed purely and simply to prevent any kind of competition between the parties at any time, and to provide a means for joining forces in competing with outsiders. This is made clear when we examine the restrictive arrangements and measure these restrictions and mutual-help arrangements against the necessities that were evident in the circumstances of the sale in 1925.

The first point: The existing business extended only to limited areas of the world; the restraints which were imposed granted to the parties a perpetual immunity in all markets of the world.

Secondly, the restraints were imposed upon the parties not only in regard to the products they were manufacturing at that time, but as to any product which either of the parties might manufacture at any future time.

Third, in addition to agreeing not to compete with each other, they agreed to restrict the resale of their products by their customers. In that way, to prevent their customers from competing with the other parties in the territories reserved to the other parties.

[fol. 71] Fourth, a third party was brought into the restrictive arrangements to round out a world cartel. This third party was neither a buyer nor a seller, was not a party to the 1925 sale.

Fifth, the good will which was being sold and transferred was a good will which had been developed by the very men who were purchasing the company and actually the selling company was, as a matter of fact, in no position to take an unfair advantage of that good will. The personal good will existed in the men who were buying the company. The good will and the name was protected by the trade-mark which the company purchased.

The sixth point is that, rather than merely having the bare limited restraint of the true ancillary restraint, the parties went further; they provided for perpetual mutual aid provisions in addition to any reasonable aid that a buyer might be expected to receive from a seller. It is at all these significant points that we find that the terms of the agreement are broader than any protection which might be necessary to the sale of a going business.

Actually, what has happened is that for more than 25 years, these agreements served the mutual interests of the three parties in a profitable cartel arrangement.

The effort of the defendant to expand the ancillary restraint doctrine to immunize the world-wide cartel arrange-
[fol. 72] ment from the application of anti-trust laws raises an issue of vital importance.

We do not believe that the doctrine of ancillary restraints can be expanded to the point where it displaces the power of Congress to regulate the foreign commerce of the United States. But that must be in effect the defendant's argument.

These private agreements between the defendant and the co-conspirators privately regulate the foreign commerce in their particular product. Now, no matter what policy Congress may decide upon in respect to trade agreements or tarrif-s, these private agreements are paramount and have no reference or regard to the policy of the United States.

What has happened is that over twenty-five years ago, a business was sold. Since that time, and for an indefinite time in the future, the defendant and the co-conspirators have treated and will go on treating the markets of the world as private property belonging to one or another of the group and subject to being transfer-ed from one to the other. In effect, their position is that because a business was sold in 1925, all foreign commerce in which Limited, the defendant Holophane, and Francaise shall ever engage is removed from the policy of Congress as expressed in the Sherman Act, and such international trade agreements as Congress may provide, or such tariffs as Congress may provide. We do not believe that the simple equities ex-
[fol. 73] presses in the doctrine of ancillary restraints can be extended with such consequences.

In conclusion, I would like to say a few words about the relief which the Government is asking for in this action. Uppermost in our minds, and properly so, we believe, is the notion that this is a civil and remedial action. Our objective is not to punish the defendant. The agreements of which we complain are in effect. They are in existance today. They are today serving to restrain the foreign com-

merce of the United States and prevent competition between the defendant and the co-conspirators.

We ask the Court to declare these to be illegal. These barriers, the foreign commerce which they have created, we ask to have removed by cancelling these agreements, and further that the defendant be enjoined from creating future barriers to that commerce; in other words, to open the avenues of competition among the parties.

The Court: The defendant may state its case.

[fol. 74] IN UNITED STATES DISTRICT COURT

OPENING STATEMENT ON BEHALF OF THE DEFENDANT

Mr. Horwitz: May it please the Court, I should like to point out in the first place that this defendant is a small company and, Judge, when I say "small", that is a gross understatement. It is an infanitesimally small company. In 1948, when this action was brought, the total net worth of this defendant was less than $1,500,000—the total net worth was less than $1,500,000. The gross sales of street lighting equipment in 1948 were less than $500,000.

In terms of percentages, its lighting equipment sales were less than one percent of all the light equipment sales in the United States—less than one percent.

Its lighting equipment sales for export from the United States were less than $100,000. In 1950, the figure was $79,500. In terms of percentage, that is 1.2 percent of all the export of lighting equipment.

In terms of prismatic glassware, in 1948, quantity-wise, this defendant manufactured only about two percent of the prismatic glassware manufactured in the United States. Price-wise, is was under four percent, about three to four percent.

In terms of street lighting equipment, the total street lighting equipment of this particular defendant runs from one percent to one and a half percent of the total.

In a sense, when this federal government brings a com-[fol. 75] plaint against this defendant and alleges that it is guilty of creating a world cartel, it is flattery to this defendant. To be put in the same company as some of the

other defendants mentioned in the plaintiff's brief, such as the National Lead Company, General Dyestuff Corporation, Aluminum Company of America, Socony Vacuum Oil Company, Timken Roller Bearing Company—your Honor, this defendant isn't in that league at all.

Let's look over the history of this defendant. It was never a big company at any time, and in the quarter of a century, and much more than that, since the predecessors of this defendant company were organized, it never was a factor in any industry.

About the turn of the century, an American by the name of Mygatt met a French professor who had experimented with a bowl which he thought was an improvement over existing luminaires. It diffused the light, he thought, and Mr. Mygatt became interested in it. He invented a trade name, Holophane, which is derived from two Greek words meaning to diffuse the light. Mr. Mygatt came back here to form an American company for the purpose of manufacturing and selling the product.

After that, he formed a French company. Mr. Mygatt, being in control of both the American and French company. Subsequently, he formed an English company, all of them Holophane companies, all of them under the control of Mr. Mygatt.

[fol. 76] To the English company, he transferred the shares of the American company, but they were all under the control of Mr. Mygatt, all three companies. However, the American company was more profitable than the others. It was under the leadership of ag-ressive Americans, and they rebelled against sending all their hard earned profits to England, and they kept trying to purchase the American company for themselves.

Finally, in 1925, they succeeded in doing so for a million dollars. In the contract of purchase, it was necessary to set up where the companies were going to do business. If they couldn't do that, no sale would have taken place, because the English company wasn't going to create someone who would take away its own business.

On the other hand, the American company wasn't going to pay for something unless it got the right to do business in America. So, as a corollary, and ancillary to that agree-

ment to purchase, it was agreed that the American company should have the territory north of the Panama Canal in America, and adjacent islands, the Philippines and Japan, all of which it felt was adaptable to American enterprise; except South America. That was left off, and it rankled in the hearts of the Americans who bought this company that South America should be left out, but it was.

England kept all the world except France and French colonies.

[fol. 77] Before this purchase, Mr. Mygatt, who controlled all three companies, could have said which of the three subsidiaries of the Holophane companies, although they were set up as separate entities, he controlled all of them. He could have said which did business where. He was in a position to do so. This particular agreement more or less kept the status quo. There was no more restraint on trade than there ever had been before in the agreement to purchase and sell, and that agreement to purchase and sell by which these Americans obtain the fruits of the labor and enterprise would never have come into being unless such an arrangement could have been made, and so it was made.

A year or so later, the French company entered into an agreement with the American company, keeping the status as it remained before the first purchase and sale. Subsequently, there were minor modifications.

In 1944, the American company at last, after many years of negotiations and attempting to obtain what they thought rightfully belonged to them in the first place, got the South American rights for which they paid the sum of $40,000. They have continued to observe those contracts ever since.

May I say this about the government's evidence in the form of the ninety-five documents which were marked this morning in evidence. Those documents consist of the agreements which we admit and the rest of the documents [fol. 78] all can be summarized by saying that they show, since 1925, that we have lived up to these agreements.

Judge, it hardly takes these documents to say that we have lived up to the agreements because we are perfectly willing to state that we have lived up to these agreements. We always thought they were legal. We think they are legal now.

As a company that has the respect of other companies in the same business, although it is a small company, and the respect of the former Holophane group in England and France—and I say "former" because before they were all one—it has their respect. We have always lived up to these contracts and the government exhibits show no more than that we are living up to them.

Judge, we rely on these facts:

No. 1. It is such a small company, and it does such a small business that it hardly seems fitting to the dignity of the federal government to pursue a minute piece of business of this nature. It is too small. The injury, if any, to the public is so minute that it is beneath the dignity of the law to try to follow.

In the second place, we say that whatever the government objects to was ancillary to the main purpose of an agreement to purchase and sell. That agreement to purchase and sell could never have come into being otherwise, and the American company could never have been formed otherwise. The fruits of this industry would never have [fols. 79-80] remained in this country if it wasn't for this agreement.

[fols. 81-82] In United States District Court, Southern District of Ohio, Eastern Division

[Title omitted]

Hearing—Before The Honorable Mell. G. Underwood, commencing June 2, 1952.

Appearances:

Robert B. Hummel, Norman H. Seidler, Harry E. Pickering, on behalf of the Plaintiff.

Shepard Broad and Lewis Horwitz, Broad and Cassel, on behalf of the Defendant.

[fol. 83] COLLOQUY BETWEEN COURT AND COUNSEL

The Court: As a result of the pretrial conference, the Court has been advised that there are certain exhibits which will be offered in behalf of the United States which may be admitted by agreement of our parties. Is that true?

Mr. Broad: That is right, your Honor.

Mr. Seidler: I propose to offer those exhibits and discuss just briefly the significance of them.

The Court: You may do so.

Is that your course of procedure? The Court is not telling you how to try your lawsuit.

Mr. Seidler: Yes, your Honor, that is what we hoped to do.

Before we proceed with the documents, there is a certain amount of historical material which has been admitted in the request for admissions which the government served on the defendants. This is matter leading up to the first document which we will submit.

The Court: Do you so agree?

Mr. Horwitz: We agree these were facts, but there were certain facts that we maintain are irrelevant.

Are those the items——

Mr. Seidler: No, the essential thing is that we are now about to put in evidence the contract of sale.

Mr. Horwitz: We have no objection to that.

Mr. Broad: But not these other so-called facts.

[fol. 84] The documents speak for themselves.

Mr. Seidler: What I propose to read from is the request for admissions, dealing with the organization of the Holophane Illuminating Company in 1925.

Mr. Horwitz: Can you refer to them by number?

Mr. Seidler: Yes, Numbers 7, 8, and 9.

Mr. Broad: There is no objection to 7, 8, and 9.

Mr. Seidler: They are admitted by the defendant.

The Court: What do you mean 7, 8, and 9?

Mr. Seidler: Nos. 7, 8, and 9 refer to statements of facts which constituted Roman Numeral III of the government's request for admission which was submitted to the defendant on May 5 by mail. The defendant, in denying certain facts, did not deny the statements that I am about to read, so they are admitted.

Roman Numeral III states that each of the following statements is true, and I am now reading statement 7, 8, and 9.

"That Charles Franck is the present president and general manager of the defendant Holophane Company, Inc. In 1925, a group of executives, engineers, and employees of the Holophane Glass Company, Inc., under the leadership of the aforementioned Charles Franck and Joel B. Liberman, attorney for Holophane Glass Company, Inc., organized the Holophane Illuminating Company, Inc. The aforementioned group of executives, engineers, and employees, [fol. 85] comprised the persons then actively engaged in the management, sales, research, and manufacturing activities of the Holophane Glass Company, Inc."

I should like to offer in evidence first Government's Exhibit No. 1.

The Court: The Court understands that by agreement of the parties. Government Exhibits 1 to 95 may be admitted in evidence, is that true?

Mr. Broad: Yes, that is true, your Honor.

The Court: They will be admitted in evidence.

Mr. Seidler: Will it be necessary to offer each document?

The Court: It will not. You have stipulated that 1 to 95 may be admitted in evidence.

Mr. Broad: Yes.

The Court: The Court is admitting them at this time.

Mr. Seidler: Government's Exhibit No. 1 consists of the minutes of the first meeting of the incorporators of the Holophane Illuminating Company.

The Court: Now, is it necessary to go in to detail at this time?

Mr. Seidler: Just to point out, your Honor.

The Court: Are they marked so that they may be properly identified, and do they not speak for themselves?

Mr. Broad: Your Honor, in this case, the minutes contain a great deal of material that is irrelevant to this case. [fol. 86] The Court: I assume eventually the Court will have to examine them all.

Mr. Seidler: I wish to point out the part of the document that is relevant to this so that you don't have to read the irrelevant part,

The Court: Do you mean to say that only a part of each of these exhibits is relevant?

Mr. Seidler: In this case, your Honor, it is a minutes of a meeting which is reported in five pages. The pertinent provision deals with the matter on the bottom of page three to the upper part of page four. Rather than just tear this document apart and take out two pages, which would make it impossible to identify it, we keep it as a whole.

The Court: Could you not mark the pertinent part by agreement of parties?

I assume before you stipulate- and agreed to introduce these exhibits that you had agreed to the parts which were to be considered as evidence. Is that true or not?

Mr. Pickering: Your Honor, Mr. Seidler was going to read not portions considered by the government to be relevant, but also to indicate why they are relevant. If your Honor does not agree to that procedure, we will not do it.

The Court: It seems to me the proper time when you make a summation of your case, it might be proper to do that, but why take the time now?

[fol. 87] Mr. Pickering: If your Honor does not care to hear it now, I assume that is all right.

Mr. Seidler: We thought more could be accomplished as it is introduced to call attention to why we are introducing it, what it tends to prove.

The Court: At the part of the document——

Mr. Seidler: We do not intend to read from every document, only certain sentences. The rest we will summarize, and this has been agreed.

Mr. Broad: I believe your Honor's observation is very much in order. So long as we have consented to the admission of all these in evidence, the case can later be summarized.

The Court: They are in evidence by agreement of parties.

Mr. Broad: That is right.

The Court: I see no necessity of arguing each piece of evidence at this time.

It will be repeated at the beginning of the case—unless you have some specific reason to advance to the Court why you should do so.

Mr. Seidler: Only that we did not want to place 95 documents on your Honor's desk without explaining.

The Court: You are not going to do so. The Court will assure you to do that. You will have ample opportunity to point out what is to be considered.

Mr. Seidler: That is what we had in mind.

[fol. 88] The Court: I assume there is no disagreement as to what parts are, the entire document is in the record.

Mr. Broad: We expect at the conclusion of the case, the government will file a brief and give us an opportunity to respond.

The Court: I will expect you to do so. You have advance notice of that.

Mr. Seidler: Will you have oral argument?

The Court: I will tell you after I read your brief. The Court will not prohibit you from having oral argument, unless it is necessary.

Are you requesting it?

Mr. Pickering: We do so request oral argument, your Honor.

The Court: The Court will direct, at the proper time,—probably at the conclusion of the case—that you make a summarization in your brief of all the pertinent parts of these exhibits which you think are germane to determination of the issues of this case. You can do that by brief, first.

After you have filed your brief, you will be afforded the opportunity of oral argument if the Court deems it necessary, or if you request it.

Will there be other documentary evidence on behalf of the government?

Mr. Seidler: None, except we are calling one witness, [fol. 89] the sales executive of the Holophane Company, and we wish to question him on certain documents which have already been admitted as genuine.

The Court: In connection with the documentary evidence the Court will put counsel on notice at this time that after this case is submitted, counsel for the plaintiff and counsel for the defendant will be directed to submit to this Court tentative findings of fact and conclusions of law, and that after each finding of fact, you shall cite the page or pages

of the record which support your finding of fact. After each conclusion of law, you will cite the authority or authorities on which you rely to sustain your conclusion of law. Naturally the Court may not have to read all this literature you are submitting. You may have to do the reading yourself.

CLARENCE C. KELLER, being first duly sworn, was examined and testified as follows:

Cross Examination.

By Mr. Seidler:

Q. State your name, please.
A. Clarence C. Keller.
Q. Your addresss?
A. RFD 2, Peekskill, New York.
Q. Your occupation, Mr. Keller?
A. Vice president in charge of sales, Holophane Company.
[fol. 90] Q. The defendant in this action?
A. Yes.
Q. When were you first employed by the Holophane Company?
A. 1929, the only job I ever had.
Q. Will you relate the various positions you held, the period of time you held each?
A. In 1920 after I graduated from Ohio State, I came to work at the Holophane Company at Newark, Ohio, in the engineering department as a trainee with the ultimate objective becoming a sales engineer.

After about nine months, I was transferred to the New York office, the headquarters of the company, to complete the training. In about a year, I was put in charge of the Application Engineering Department, and a few years later, made assistant salesmanager, then a couple of years after that, salesmanager, and in 1946, general salesmanager, and in 1948, vice president in charge of sales.

Q. At the time of the filing of the complaint in this action, you were the vice president in charge of sales, that is in 1949?

A. Yes.

Q. What are your duties?

A. My duties generally are the supervision of our staff of field engineers who are located throughout the United States and Mexico, supervising their daily work, and super- [fol. 91] vising correspondence in connection with the application of our products through our commercial or application engineering department, ration the handling of orders and service pertaining to servicing our customers.

Q. At that time, you had charge of export sales?

A. Yes.

Q. Who was your immediate superior at that time?

A. Mr. Charles Franck.

Q. And did you receive instructions concerning export sales policy from Mr. Charles Franck?

A. That if right, sir.

Q. On the basis of your professional training and your service with the Holophane Company, are you familiar with the various products manufactured and sold by Holophane?

A. Yes.

Q. Will you tell us what products are manufactured, what generally, the product manufactured by the Holophane Company is?

The Court: Are you in disagreement as to what is manufactured?

Mr. Broad: No, sir.

The Court: Is it possible to stipulate?

Mr. Broad: I believe this witness's answer would be as quick as a stipulation.

The Court: Go ahead.

[fol. 92] The Witness: Our products are made as a service to our engineering organization which is the principle business of our company. The products that we make are to serve our customers and to satisfy the engineering requirements of our district and field and headquarters engineers are primarily prismatic glass and fixtures that utilize those prismatic glass parts.

Q. You manufacture the prismatic glass. Do you manufacture the fixture?

A. We do not actually fabricate many of the fixtures. We

do most of the assembling of the fixtures that utilize the prismatic glass parts in the complete lighting units that we manufacture and sell.

Q. Now, am I correct in my understanding that the four categories of the products sold by the Holophane Company constitute street lighting, institutional, industrial, and commercial?

A. That is generally correct, sir.

Q. Calling your attention first to the institutional part of your business, will you describe the method of distribution from the Holophane Company to the customer, the ultimate customer?

A. Do I understand you mean trace the sale of a product?

Q. To the ultimate consumer.

A. The sale originates by the Holophane salesman or dis- [fol. 93] trict engineer making a light specification—that is prescribing the lighting for the customer. The customer accepts that recommendation and he then orders the material by placing a contract generally with an electrical contractor. The electrical contractor or electrician who installs the fixture gives the customer a bid or estimate of what the whole lighting installation is going to cost him. The part that we manufacture is only a part of that cost to the user.

The electrical contractor, having received his contract, then places his order with an electrical wholesaler. A wholesaler is the Holophane distributor and the Holophane distributor then places his order with the Holophane Company.

Q. Are these products ordered from a catalog, or are they in all cases especially engineered?

A. The function of a Holophane engineer is to utilize the products which are available to him and they are generally listed and described in a publication we call a "datalog," which is our general catalog.

Q. Let me hand you Government's Exhibit No. 50. Is this the Holophane datalog?

A. It is, sir.

Q. This datalog sets forth commercial, hospital, and industrial fixtures. Is this the complete product in these three catagories which is being manufactured and sold by the Holophane Company at the time of the filing of the complaint?

[fol. 94] A. No, it does not represent the complete product because there are many items which are sold infrequently that are not listed in this catalog.

Q. Calling your attention to page two, Mr. Keller, the second paragraph which reads "With they years has come knowledge based on experience that enables our engineers to solve new problems in designing and accurately predict while the unit is on the drafting board what the final performance will be. This has resulted in numerous unusual lighting units known to us as specifics, whose performance for their designated use can not be matched by any other equipment on the market."

I wonder if you would describe to us what a "specific" is.

A. A "specific is a term we have assigned for two different purposes. We have assigned this term to a particular kind of lighting unit that is designed to do a specific lighting job. For example, a lighting unit which is designed to light a corridor in this building, we will say, must provide a distribution of light which fits the corridor. That lighting unit is generally not used for many other purposes, and so it is known as specifically a corridor lighting specific.

Q. Are specifics manufactured or designed in each of the categories of Holophane products, which we discussed?

A. No, they are not.

Q. In which are they ac*ut*ally used?

[fol. 95] A. Well, we have the one I mentioned, a specific for corridor lighting, a specific for book-stack lighting, or a specific for lighting vertical surfaces.

Q. Is there any specific for street lighting?

A. Well, we have the type of unit or globe we call refractors which are used for street lighting, but there are probably 75 or 80 of them. A specific get down to a little more definite purpose than just a general market such as street lighting.

Q. It is designed for a specific job?

A. A specific location in a specific market.

Q. And would be used in any of the categories where a specific job called for it?

A. I could amplify that by saying that a specific is often times used for places other than which it is designated be-

cause it may have characteristics for performance or construction that makes it suitable to an application we never thought of before.

Q. Can you describe for us the method of distribution for industrial fixtures?

A. The method of distribution is the same as that which I described before.

Q. And as to commercial fixtures?

A. The same.

Q. And street lighting fixtures?

[fol. 96] A. We don't manufacture street lighting fixtures.

Q. You sell street lighting fixtures?

A. Yes.

Q. Will you describe the method of distribution of street lighting fixtures?

A. As I say, the method is one that I can't describe completly because we don't sell the street lighting fixtures.

Q. I think I can clarify that. In the street lighting field, you manufactured only the glass?

A. That is right.

Q. And sell only the glass?

A. Yes.

Q. And you sell that in turn to a customer who affixes that to a street lighting fixture?

A. Yes.

Q. Who are your customers?

A. General Electric, Westinghouse, General Lighting Company, Joslin Electric Manufacturing Company, are our principal customers in this field.

Q. Handing you Government's Exhibit 31, "Advanced Street Lighting Practice, Holophane", does this represent the street lighting glass that you were manufacturing and selling in 1949 at the time of the filing of this complaint?

A. This catalog was issued in 1939 and therefore could not actually be said to represent all of the things that we [fol. 97] sold in 1949.

Q. Is there another catalog in existence?

A. No there is not another catalog and it is the catalog we had in use at the time.

Q. But there were other fixtures along that line?

A. Yes, I would say so because we make new developments.

Q. When there is a new development, you don't immediately issue a catalog to cover it?

A. No we do not.

Q. Mr. Keller, are you familiar with the product of Holophand, Limited, and the French Holophane Company?

A. Only in a very general way, having their catalogs and looking at them from time to time.

Q. Well, can you tell us whether they have the same categories for the marketing of their products as the Holophane Company does? That is, does it break down into street lighting, institutions, and industrial?

A. They have some additional categories, I believe. For instance, they are interested in the field of theater lighting. We are not.

Q. In other words, they manufacture products that you do not manufacture?

A. That is right.

Q. Do you in turn manufacture products which they do not manufacture?

[fol. 98] A. I think that is correct.

Q. Do you know if the English Company, Limited, manufactures its own glass?

A. It does not.

Q. Does the French Company?

A. Yes.

Q. You made mention of one of the other companies being interested in the field of theater lighting. Do you know which company that is?

A. Holophane, Limited, is, and France may be, and there are others.

Q. Are there other fields other than theater lighting that they are interested in that you are not?

A. They are interested in the field of explosion-proof lighting, manufacture of equipment for hazardous locations. We do not manufacture such equipment.

Q. Any other fields?

A. None that I can recall.

Q. What product does Holophane manufacture in America, that Limited and Francaise does not?

A. Well, I am afraid, sir, that is a pretty big order. I would not be able to answer that completely. In general, neither of the Holophane companies, England or France,

manufactures fluorescent lighting equipment. Their line is not nearly as extensive in many categories of industrial [fol. 99] lighting equipment, and I think that, generally speaking, these companies make most of the same kinds of things we make, but not nearly as extensive in variety of types and sizes to do the many different kinds of things that we are called upon to do as a result of a more complex lighting problems we have here.

Q. You mentioned fluorescent lighting. Do you recall when the first fluorescent lighting fixture was made by the Holophane Company, the year, roughly speaking?

A. U.S.A.?

Q. Yes.

A. About 1945. Excuse me, we made a start at it before the war. It isn't quite correct, but we just got started, the war came along and we didn't make it any longer, but really got into it in 1945, probably about 1941 or 1942 when we actually made the first one.

Q. Mr. Keller, I hand you Government's Exhibit No. 32. Can you identify that document?

A. Yes, I wrote it.

Q. You wrote this to whom?

A. Mr. Franck.

Q. Was this letter written for the purpose of obtaining specific official instructions on how to handle foreign inquiries and orders in accordance with the company's agreement with Limited and Francaise?

A. That is right.

[fol. 100] Q. Do you notice the handwritten material on the document? Do you recognize that handwriting?

A. Well, I guess it was Mr. Francks'.

Q. Do you recognize it as Mr. Francks'?

A. Yes, I do.

Q. Do you recall the circumstances under which the handwriting material was written in?

A. No, I do not.

Q. As the author of this memo, does the handwriting material indicate to you the instructions which you received from Mr. Franck concerning each of the situations which you set out there? For example you state, "Would you please, at your convenience, give me instructions on the following situations." You then have numbered paragraphs

1, 2, 3, 4. Notice number one deals with an inquiry received from a concern in the United States calling for Holophane U.S.A. products to be shipped to them in a country serviced by a foreign Holophane Company.

You then have sub-sentences A, B, and C, and, "Do you refer the inquiry to the appropriate Holophane Company, or do we ask the appropriate company for handling, or do we fill the order and inform the appropriate company that we have done so?"

On the right-hand column are written "Yes, yes," and "Not necessarily."

Does that indicate the answers which you received?

[fol. 101] A. Yes.

Q. You will notice in the right-hand margin, the statement "Where we have not done the speck work." Will you explain what is meant by that?

A. Yes, that deals with the very nature of our business because our business is the making of lighting specifications, and very seldom does an order for Holophane material originate without first having had a specification made. The specification may have been made in collaboration with an architect or a consulting engineer, or directly for the user himself, and Mr. Franck, I assume, meant that in a case where we have not done that, then these conditions apply.

Q. Then, the answers which are listed under "Where we have not done the speck work"; "Do we ask the *ask the* appropriate Holophane company for instructions? Yes." "Do we refer the inquiry to the appropriate Holophane Company? Yes," and "Do you do *no*?" and the memo "Not necessarily".

A. The notation on the left-hand side says——

Q. What does the notation on the left-hand side say?

A. "Where we do the speck work" and he has two arrows pointing to these A and B.

Q. Well, then, the answer to your question differs depending on whether you do or do not do the speck work, is that correct?

A. Yes.

Q. I wonder if you could give us a hypothetical instance [fol. 102] in which a situation such as you have set forth,

Number 1 would occur, and how you would handle it in lieu of these instructions?

A. Let us assume that the United States Steel Company is going to build a steelmill in some foreign country, and the Holophane engineer calling regularly on the United States Steel Company at their engineering headquarters will be asked to make a recommendation for lighting of that steelplant. He probably does not know where this steel plant is to be located. He will proceed with the making of his recommendations of lighting specifications, and from then on, after time goes by, the United States Steel Company will presumably attempt to place an order for this material.

When they place this order or give it to one of our distributors, we will then learn where it is being shipped. Well, because we have done this work, we then proceed to accept and fill that order, but handle it in accordance with the contract or agreement that exists between the two companies.

Q. You say "Handle it in accordance with the agreement or contract that exists." Does that mean you would write to the English company for their instructions?

A. No, we would not in that case.

Q. You would not. In what way would you abide by the commission. Would a commission be reserved?

A. A commission would be reserved for one appropriate Holophane company.

[fol. 103] Q. But you say you would not get permission from that appropriate Holophane company?

A. Not in that case, no.

Q. Would that appropriate Holophane company have advance notice that such a shipment was going out?

A. That might have.

Q. On the left-hand side—that was where you do the speck work. Where you have not done the speck work, I assume the United States Steel Company has not required any specification work.

A. They might have.

Q. But they submit an order to you?

A. Yes.

Q. Calling for a shipment of your product into a ter-

ritory reserved to the English or French Company. How would you handle that in accordance with these instructions?

A. We would write to the appropriate Holophane Company and ask them for instructions, whether they wished us to accept the order and reserve the stipulated commission for them, or whether they wished us to refer the order to them.

Q. As to the second paragraph, "An inquiry received from a concern located in a foreign country serviced by a foreign Holophane Company," you ask, "Do we refer the inquired to the the appropriate Holophane Company, or do we ask the appropriate Holophane Company for instruc-[fol. 104] tions in handling, or "Do we fill and notify the appropriate company that we have done so."

Would you give us a hypothetical instance in which such a situation might occur?

A. Well, any company, we will say in England, I don't know the names of any companies in England, but any John Doe company in England would send us an inquiry for a certain number of pieces of Holophane equipment. We would refer that inquirer to the appropriate Holophane Company which in that case would be Holophane Limited.

Q. If it was an inquiry from a territory of the French Company, you would refer to the French?

A. Yes.

Q. And as to Item 3, this deals with "An order from a concern in the United States for material not manufactured by the appropriate foreign Holophane Company, and to be shipped into territory regularly serviced by the foreign Holophane Company."

As I understand it, you set out two questions there, "Do we accept the order and fill it and inform the appropriate Holophane Company, or do we inform the appropriate Holophane Company that we have the order and follow their directions?" You do not do the first, but you do the second?

A. That is right.

Q. This would apply to a foreign company which is seek-

[fol. 105] ing a product which is not manufactured by a foreign Holophane Company, is that so?

A. That is right.

Q. Can you think of a hypothetical situation?

A. Do you mean to stipulate a type of product or a type of customer?

Q. I assume that both have to be present, that the product is not manufactured by the foreign company, and that it is from a concern in the United States to be shipped to a foreign company.

Mr. Horwitz: If your Honor please, I have been patient in allowing these questions for the purpose of whatever the government had in mind, buy I don't think that hypothetical situations are relevant to this case, and the document speaks for itself, so far as the exhibit is concerned.

The Court: The Court will take a brief recess at this time.

(Short recess).

The Court: This will be your first and last witness?

Mr. Seidler: Yes.

The Court: How long will it take to conclude with this witness?

—. I think we can conclude in a matter of five minutes.

Mr. Broad: We will have cross examination of perhaps a half hour or three quarters.

[fol. 106] The Court: Well, we have not been in court all day but the Court has been working. I generally quit at 4:30.

Let the record show by agreement of the Court and approval of the party, the case is continued to Wednesday morning.

[fol. 107] Wednesday, June 4, 1952, 10:00 a. m.

CLARENCE C. KELLER, resumed the stand, and cross-examination continued:

By Mr. Seidler:

Q. Mr. Keller, I would like to just briefly review with you the product manufactured by the Holophane Company, that is manufactured in its factory in Newark.

Am I right that it is a prismatic glassware which is to be used with illuminating appliances which make use of artificial light?

A. That is the principal product also comprises the lighting fixtures which——

Q. I was speaking of the product that was actually manufactured at the factory, as distinguished from the complete line which you sell.

A. Well, there is a certain amount of fabrication and assembly of metal parts, too, in the factory.

Q. But in all cases, the prismatic glassware and the illuminating appliances containing that prismatic glassware are designed to control the distribution of artificial light?

A. That is right.

Q. You mentioned that the prismatic glass is manufactured in the form of a lens, a refractor, or a reflector. Will you distinguish between the three, please?

[fol. 108] A. A lens, as we describe it, or as we conceive it, is generally approximately the same thing as a refractor. Both pieces refract light. That is, they receive light that may come to it from a lamp, whether the lamp be an incandescent bulb, fluorescent tube, or whatever the light source may be, and directs the light into a predetermined or predescribed pattern.

The lenses, as I say, lenses and refractors should probably be described together because they act in the same way. In the case of a lens, its function might be to lay down a specific pattern of light to light the Judge's desk, for example, or a corridor, as I mentioned earlier, and in general accepts light for transmission through it.

A reflector, on the other hand, receives light and reflects it back in the general direction from which it came. The pattern into which it is reflected is determined by the

type of prismatic structure and by the shape of the reflector.

Q. The difference, then, between the three is not necessarily in its form, but rather in its function?

A. Well, the form has considerable to do with the difference because you could not have the form of a reflector, for example, acting as a refractor or a lens.

Q. I see, but the lens and the refractor are in the same class the same category in the sense that the light passes through them, where as the reflector bounces the light back, [fol. 109] towards the source?

A. That is right.

Q. And the lens and the refractor, then, are used in the same type of fixtures, that is, they would both be used for institutional fixtures?

A. Well, refractors are generally used for street lighting and outdoor applications, where as lenses are generally used for indoor applications, for institutions and offices, hospital surgeries, and, as a matter of fact, anything that is to be lighted can be lighted with a lens.

Q. And the reflector is used on indoor lighting fixtures as well?

A. Reflectors are used in combination with refractors or they may be used separately. They are both used indoors and outdoors.

Q. I see. Now, as to the street lighting appliance, that is the street lighting fixture, you don't manufacture the fixture, you only manufacture the glass?

A. That is correct.

Q. Now, as to the institutional, commercial, and industrial fixtures, you manufacture or rather you assemble and fabricate a fixture for sale. Do you also sell the glass alone to a manufacturer who may incorporate that glass into a finished fixture?

A. Yes.

[fol. 110] Q. Mr. Keller, would I be correct in stating that the Holophane Company does not manufacture prismatic glassware for what is, I believe, referred to as architectural glassing? That is a sheet of prismatic glassware which would be used in place of a window or a door which would

have mainly as its light source sunlight as distinguished from artificial light?

A. Not much of our glassware is used for that purpose, but it has been and can be used for that purpose.

Q. Do you sell it for that purpose?

A. Well, it is used for that purpose. It has been used for that purpose. For example, for skylights in art galleries and that sort of thing, it has been used for that purpose.

Q. Will you tell us which product?

A. Prismatic lenses are used for that purpose?

Q. Prismatic lenses are purchased for that purpose?

A. Yes.

Q. But that prismatic lens, I take it, does not differ from the lens which you sell for use with an artificial lighting fixture?

A. It does differ in that it has a different type of prismatic structure because it is necessary to have the proper kind of prismatic structure for use with the kind of application that it is going to be used in.

Q. I see. Then you manufacture a special prismatic glassware for use in skylights or windows?

[fol. 111] A. Yes.

Q. Can you estimate roughly what percentage of your total manufactured product that would constitute?

A. Very small percentage of it. I wouldn't be able to give anything in figures.

Q. Is an optical lens considered a piece of prismatic glassware?

A. Do you mean such as the one used in eye-glasses?

Q. Eye-glasses, in a camera, in a projector?

A. They are synonymous in that they both do the same kind of things. We have segments of so-called optical lenses in our own—as parts of our prismatic lenses, or lens plates, I should say.

Q. Is your prismatic lens polished?

A. No.

Q. But an optical lens would be polished?

A. Generally speaking, a lens that is used for eye-glasses is polished, yes.

Q. And you don't manufacture any lenses for use in a camera or projector or in eye glasses?

A. No.

Q. Is the glass in a sealed-beam automobile head-light, is that considered prismatic glassware?

A. Yes.

Q. Do you manufacture that?

[fol. 112] A. No.

Q. Do you know who does?

A. No, I do not.

Q. Does the Holophane Company manufacture a prismatic glass for use in a highway or airport warning device?

A. It has, but it does not now.

Q. And am I correct in stating that the Holophane Company does not manufacture floodlights, spotlights, or theatrical lighting fixtures?

A. In the generally accepted industry definition of floodlights, we do not manufacture floodlights. We have equipment which performs essentially the same purpose as floodlights.

A. Then the substantial product of the Holophane Company can be stated to be prismatic glassware, illuminating appliances containing prismatic glassware in four categories, street lighting, institutional, commercial, and industrial?

A. That is right.

Q. Mr. Keller, as I understand it, engineering plays a large part in the selling of the Holophane produce, is that correct?

A. Yes, sir.

Q. Can you estimate roughly what percent of your sales are based on the engineering service which you offer?

A. It would be purely a guess, Mr. Seidler.

[fol. 113] Mr. Horwitz: Your Honor, please, I object.

The Court: Read the question.

(Question read.)

The Court: State your objection.

Mr. Horwitz: It has not been brought out that this witness has knowledge of that information. He has stated it would be purely a guess.

The Court: If you know, you may answer. Do you know?

The Witness: I do not know accurately. It would be purely a guess.

Mr. Seidler: Your Honor, this witness has testified he is an executive engineer in charge of sales, has served in both an engineering and sales capacity with the company. He has testified as to the importance of engineering in the company's sales. We would just like to have some notion of what his opinion would be as to the value of the engineering service that he offers in consummating a sale.

The Court: If he has an opinion, he may give it.

The Witness: I have an opinion, and it is an opinion, and I would say it is approximately 75 percent of our sales are a result of our engineering service.

Mr. Seidler: Do you consider your salesmen as engineers who must not only sell a product, but also a job?

A. Yes, sir, all of them.

Q. How many such salesmen-engineers do you employ? [fol. 114] A. We have now twenty-five.

Q. Would you say, Mr. Keller, that the customer who comes to the Holophane Company realizes that he is purchasing more than a Holophane fixture, that he is, in fact, purchasing a service of the Holophane Company?

Mr. Horwitz: If your Honor please, I have an objection to that question on the ground that it is cross-examination, and I ask that no leading questions be asked of that Government's witness.

Mr. Seidler: If your Honor please, the Rules of Civil Procedure, Rule 43-B, provides that the executive of the defendant company is to be treated as a witness for the defendant. It is a subject of cross examination.

The Court: Is that not permitted under the Rule?

Mr. Horwitz: Yes, sir, I think it is, but I think it would clarify all the issues if the witness were allowed to state in his own words what the situation is rather than to answer yes or no.

The Court: The witness is very intelligent. I am sure he can answer accordingly. Overruled.

The Witness: May I hear the question again?

(Question read.)

The Witness: The services of the Holophane Company are not sold as such. However, most people, in conference with Holophane representatives, realize that they obtain a [fol. 115] Holophane—an engineering service which is in effect a solution to their lighting problem. The lighting problem not only constitutes selection of the proper type and number and location of lighting equipment, but it also is necessary to prescribe the environment around in the room, such as the finishes on the walls, the floors, ceiling, and so on. When I say "finishes" I mean the color of these so that the entire result that the clustomer obtains is one that will be satisfactory to him.

Mr. Seidler: Thank you.

Q. During the period that you have been in charge of sales for the Holophane Company, has any effort been made to develop a market for the sale of your product in Japan?

A. No.

Q. Has any such effort been made to develop a market for the sale of your product in the Philippine Islands?

A. Yes.

Q. Will you state the nature of that effort?

A. We have a distributor who operates in the Philippine Islands, and he has sent representatives to our headquarters to obtain engineering instructions on the application of our product and has taken the engineering data back with him for the purpose of trying to apply that product in the Philippine Islands.

Q. When was he appointed as a distributor?

A. About five years ago.

[fol. 116] Q. And have substantial sales resulted from his efforts?

A. We would say not substantial sales.

Q. Mr. Keller. I hand you Government's Exhibit No. 34 and ask you if you are able to identify this document?

A. Yes, sir.

Q. Will you do so, please?

A. It is a letter that I have written to Mr. Franck, dated March 3, 1949.

Q. I notice some handwritten material on the right-hand

side of the second paragraph. Do you recognize that handwriting, sir?

A. Well, it would appear to be Mr. Franck's, but it could be—it could not be.

Q. Are you acquainted with Mr. Franck's handwriting?

A. Yes.

Q. Have you seen it—do you have occasion to see it in the course of your business?

A. Yes, I do.

Q. You are not sure that that is his handwriting?

A. I would not say positively that it is, but it looks like it.

Q. Would you read that paragraph?

A. "As I understand it, though, under number one where we do the specification work, we are to follow B and not A or C."

Q. And the handwriting notation?

[fol. 117] A. Says, "Correct."

Q. Does that paragraph one refer to paragraph number one of Government's Exhibit No. 32?

A. Yes.

Q. Then, under those instructions, Mr. Keller, as I understand it, under situation No. 1 which reads "An inquiry received from a concern in the United States calling for Holophane U.S.A. products to be shipped to them in a country serviced by a foreign Holophane Company, where you did the specification work, you would ask the appropriate Holophane Company for instructions in handling", is that correct?

A. That is what it says here.

Q. Do you consider those your instructions?

A. Yes.

Q. Referring to Exhibit 34, do you recognize the handwriting at the bottom of the page?

A. That also looks like Mr. Franck's.

Q. Can you read that handwritten notation?

A. "No difference as long as it not in your domain of action."

Q. Does it refer to the last paragraph of this letter?

A. Yes.

Q. And what does that last paragraph state?

A. "Incidentally, wouldn't it make a difference where

the problem came up with respect to say England as against Africa?"

[fol. 118] Q. Mr. Keller, I hand you Government's Exhibit No. 35. Can you identify this document?

A. Yes. This is a letter that I wrote to Holophane Limited in London on September 14, 1948.

Q. Across the face of this letter is handwritten material. Do you recognize the handwriting?

A. Yes, that is Mr. Franck's.

Q. Can you read that handwriting. It is not quite clear.

A. It isn't always clear to me either. It says "Approximately—" two lines, and then another notation, it says, "Give our sales price in U.S.A." and another line, and says "Other wise—" and I can't identify the last word.

Q. I hand you Government's Exhibit No. 36. Can you identify that document?

A. That is a letter that I wrote on September 17, 1948, to Holophane Limited, in London.

Q. Calling your attention to the last paragraph reading as follows, "In addition, you may be interested to know what our selling price to General Electric Company here in this country is. At the present it is 347 net each f.o.b. factory with export packing extra." Did you write this letter pursuant to the handwritten instructions which you recived from Mr. Franck on Exhibit No. 35?

A. I don't know. I don't remember.

Mr. Seidler: No further questions of this witness,

[fol. 119] Redirect examination.

By Mr. Horwitz:

Q. Mr. Keller, will you please state fully your qualifications as an expert in the field of lighting.

A. I am a graduate electrical engineer from Ohio State University, graduating in 1929, with a degree of Bachelor of Electrical Engineering.

In 1935, I received a degree of professional electrical engineer, and for the last fifteen years, have been actively participating in the affairs of the Illuminating Engineers Society, the Professional Society of Illuminating Engineers, and at present am general secretary of the national organization of that society.

Q. Mr. Keller, in 1948, what was the total net worth of the defendant?

A. Approximately $1,400,000.

Q. What was the defendant's gross sales of street lighting in 1948?

A. $42,000.

Q. What percent of Holophane business was street lighting business in 1948?

A. Approximately fifteen percent.

Q. In 1948, what percent of prismatic glassware manufactured in the United States did Holophane manufacture?

Mr. Seidler: Your Honor, I wish to enter an objection. [fol. 120] The Court: Yes, what right do you have to this course of examination? Are you presenting your case in chief?

Mr. Horwitz: If you have no objection, your Honor.

The Court: I don't object, counsel is objecting.

Mr. Horwitz: We can put him on as our witness later.

Mr. Seidler: I think that is true. Your Honor, in lieu of that, we are willing to save time and permit the examination.

The Court: I think it would expedite the case.

Mr. Seidler: However, your Honor, I would like to object to the line of question that defense is pursuing. The Government feels that this line of question is irrelevant and immaterial. Any testimony on the amount of commerce which is done by the defendant, or the number of competitors which the defendant has, are irrelevant and immaterial under the cases. The defendant is charged with a Section 1 violation, not with Section 2, a monopoly; but solely with Section 1, and Section 1 brands as illegal the character of the restraint and not the amount of the restraint, so the amount of interstate or foreign commerce which is actually involved is not material, and we cite U. S. vs. Socony Vacuum case, at 310 U. S. 150. Further, in the Sixth Circuit, we would cite the U. S. vs. Patterson, 222 Federal, at page 691, to the effect that there is no act of interstate trade or commerce so insignificant as not to be protected by Section 1 of the Sherman Act, and it was only [fol. 121] recently that Judge Ryan, in the Southern District of New York, in the Imperial Chemical Industries case

had precisely this situation facing him, and in his decision at 100 Federal Supplement 504, at page 529, stated "Nor are the operations of the defendants in any way immunized under the Sherman Act by the failure of the Government to allege or attempt to prove the domination by the defendant of the industries involved."

Just last month, on May 16, 1952, Judge Ryan, in this same case, in an opinion as yet unreported, stated at page three of the decision, "It was not required of the Government to establish that the defendants had power to control the markets they agreed to divide and allocate, since the suit was filed for a violation of Section 1."

Your Honor, we have prepared a small written brief stating our objections to the defendant's Exhibits 1 through 18. Our objection to the Exhibits 1 through 17 are along the same grounds as our objections to testimony of this nature.

We are prepared to submit that written objection in accordance with your Honor's instructions at pretrial conference, and furthermore to deal fully with this subject in our brief, if necessary.

The Court: What do you say in reply?

Mr. Horwitz: If your Honor please, in the case of Ramburn vs. Brotherhood which was cited in our trial brief, it was stated, "When the inquiry to the public is too remote [fol. 122] to weigh, the law is not concerned with it."

The injury here is so remote the law should not even take notice of it.

May I also state, your Honor, almost all the cases under the Sherman Anti-trust Act, the opinion has incorporated in the percentages of control by the defendants, the figures showing gross sales, net sales, and so on. They must have come into the evidence some how.

Apparently the Courts have always considered the figures relating to the actual control of the defendant over the industry, if any, the percentage of the sales, and the percentage of the manufacture that they control to be relevant to the inquiry.

It has been stated time and time again that each particular case arising under the Sherman Act rests on its own bottom, that the facts are always important, that the

thing must be considered in connection with all the surrounding facts and circumstances of the defendant and its relation to the industry.

The figures that I am about to elicit from this witness won't take long to elicit, and won't take up much time with this court. It is only a matter of minutes. That is not before a jury. Your Honor is certainly going to weigh the value of these facts and it will do no harm to get them in evidence for the value we think they are worth and for your [fol. 123] Honor to weigh.

The Court: What do you say in reply to the authorities which counsel for the Government just cited?

Mr. Seidler: Well, if you——

The Court: Did you furnish counsel with your authorities? I assume you are familiar with them.

Mr. Horwitz: I have not been supplied with that.

Mr. Seidler: Your Honor, we first saw the defendant's documents two days ago. Our brief in objecting to these documents is being typed now. We will supply them.

The Court: I assume your testimony will not only go to this testimony but to all exhibits.

Mr. Seidler: That is right.

The Court: Would we not expedite the case by permitting him to go ahead and the Court reserving the ruling on admissibility?

Mr. Seidler: This, your Honor, opens up a line of questioning to us that we had not planned on pursuing. We object to the introduction of such evidence as not being relevant or material, but once it is in, we believe that we should have a right to raise counter evidence.

The Court: You will be afforded that opportunity.

Mr. Seidler: Thank you.

The Court: The Court will reserve the ruling on the admissibility of this evidence.

[fol. 124] Mr. Horwitz: Is there a question pending?

(Question read.)

Mr. Seidler: One further objection. He has testified to his experience as an engineer in the field. There has been no foundation, no ground-work laid as to how he would have knowledge of the complete sales, total sales——

The Court: Objection sustained on that ground, until you can qualify your witness.

By Mr. Horwitz:

Q. Do you know, Mr. Witness, in 1948, what percentage of prismatic glassware manufactured in the United States that the Holophane Company manufactures?

A. I have a pretty good knowledge of the figures that are available from the United States Department of Commerce and from the examination of those figures, it is approximately four percent of the total sales.

Mr. Seidler: Your Honor, we object to it——

The Court: Sustained.

He asked you whether or not you know. Do you have knowledge?

The Witness: The only knowledge I have is what I read in the Government statistics.

Mr. Horwitz: What do the Government statistics relate to——

Mr. Seidler: Objection, your Honor. If they are Gov-[fol. 125] ernment statistics——

The Court: Yes, they are the best evidence. If you have statistics, you will have to produce them.

Mr. Horwitz: For what year are the latest figures available for lighting equipment manufacture and sale?

A. 1950.

Q. Do you have the Government figures relating to the total lighting equipment sales in the United States for 1950?

A. Yes.

Q. Will you produce them, please?

A. I have them written out an a piece of paper. They are six hundred million dollars.

The Court: Just a moment.

Mr. Seidler: I object.

The Court: Sustained.

Mr. Horwitz: Do you have the figures in your file here directly from the Government?

A. No, I do not. I only have them written out on a piece of paper.

Q. Do you have a printed table showing what those figures —.

A. In answer to your last question?

Q. Yes.

A. No.

Q. Do you have the Government figures for 1950 relating to the total lighting equipment sales for export from [fol. 126] the United States?

A. I have the figures as given to me as being approximately $689,000,000.

Mr. Seidler: Objection, your Honor, to the question.

The Court: Sustained.

By Mr. Horwitz:

Q. Do you have the printed publication with you showing those figures?

A. No.

Q. Mr. Keller, do you have available the figures showing the total production of illuminating ware in the United States in the year 1948?

A. Yes.

Q. What are the source of those figures?

A. Source is United States Department of Commerce, in collaboration with the United States Tariff Commission.

Q. What do those figures reveal?

Mr. Seidler: Your Honor, we wish to object to the reading of figures from this chart which seems to have been enclosed in a magazine. The magazine was dated 1950, "The Glass Industry," and it purports to be figures issued by the U. S. Department of Commerce. We object to the use of such a chart until it has been substantiated in some way.

The Court: That is true. You have not qualified your chart in any way. Sustained.

[fol. 127] By Mr. Horwitz:

Q. Mr. Keller, where was this chart obtained?

A. The chart was obtained from the magazine, "The Glass Industry."

Q. Will you please state what these figures reveal?

Mr. Seidler: I object.

The Court: The chart speaks for itself, if it is admissible for the purpose indicated.

Mr. Horwitz: Your Honor, please, I wish to offer this in evidence.

The Court: How is it competent?

Mr. Horwitz: If the objection is sustained, I'll——

The Court: Yes, there is nothing to prevent you from securing proper statistical information from the proper department without resorting to a magazine. Sustained.

By Mr. Horwitz:

Q. Mr. Keller, referring to prismatic glassware, are there other manufacturers and sellers of glassware than the Holophane Companies in and outside the United States?

A. Yes.

Q. Do you have available any advertising literature of companies relating to such products?

A. Yes, I have.

Q. I show you Defendant's Exhibits, for identification, Numbers 1 through 9, inclusive, and I ask you what they are. [fol. 128] A. Number 1 is engineering data and catalog information of the Corning Glass Company, showing various items of prismatic glass that they manufacture.

Q. What is Defendant's Exhibit Number 2?

A. Exhibit 2 is a catalog page of the Kirlin Company showing products which they manufacture that employ prismatic glass that is not manufactured by us.

Q. What is Defendant's Exhibit 3?

Mr. Seidler: Your Honor, we object to the question on the Kirlin Company. There is no indication on here that the Kirlin Company manufactures the product. It is a cost sheet, as far as we can see.

Mr. Horwitz: We have not offered it in evidence. You can cross examine on it.

Mr. Seidler: All right.

The Court: Do you desire to cross examine at this time on this document?

Mr. Seidler: Yes, if we may.

The Court: You will be afforded that opportunity.

Mr. Seidler: I think we may have questions on every one, we can defer that until after he has offered them.

The Witness: This is a catalog page of data of the Phoenix Glass Company on prismatic lenses that they make for fl-orescent lamps.

By Mr. Horwitz:

[fol. 129] Q. I show you Defendant's Exhibit 4 and ask you what that is.

A. This is a catalogue of Libby-Owens-Ford Glass Company, showing various kinds of glass that they manufacture, including prismatic glass.

Q. What is Defendant's Exhibit 5?

A. This is a catalog of the Mississippi Glass Company, showing the various kinds of glass that they manufacture and described as lenses and so on.

Q. Is that prismatic glassware?

A. Yes.

Q. I will show you Defendant's Exhibit 6.

A. This is an advertisement of the Cope Glass Company, illustrating numerous types of prismatic glass.

Q. Defendant's Exhibit 7.

A. This is a catalog of the Miller Company, showing their lighting units, one of which has prismatic.

Q. Defendant's Exhibit 8.

A. These are a number of catalog pages of the Crouse-Hinds Company containing engineering data on the products they manufacture, many of which employ prismatic glass that we don't sell them.

Q. Defendant's Exhibit 9.

A. This is an advertisement of the Grote Manufacturing Company, showing various types of prismatic glass re-[fol. 130] flectors that they manufacture.

Q. Defendant's Exhibit 10.

A. This is an advertisement of the Heyse and Company of London, England, showing a lighting unit that they manufacture that employs prismatic glassware, not manufactured by Holophane.

Q. Defendant's Exhibit 11.

A. This is an advertisement of the Revo Electric Com-

pany of Tipton, England, showing a lighting unit that they manufacture, employing prismatic glass.

Q. Can you summarize Defendant's Exhibits 12, 13, 14, 15, 16?

A. These are advertisements—13, 14, 15, and 12, are also advertisements of manufacturers of street lighting equipment using prismatic glass.

Q. Are they all English concerns?

A. All English concerns, yes.

Q. What is Defendant's Exhibit 16?

A. Defendant's Exhibit 16 is a clipping from the Official Publication of the Illuminating Society of London, that is their transactions, showing two types of prismatic elements that are not Holophane.

Mr. Horowitz: If your Honor please, I would like to offer in evidence, Defendant's Exhibits 1 through 16.

The Court: Is there an objection?

[fol. 131] Mr. Seidler: Yes there is, your Honor.

The Court: State your objection.

Mr. Seidler: First on the ground of relevensy which we have raised. Secondly, on the ground of competency. As I view them, they consist of advertisements torn from magazines, pages torn from technical books or magazines, yet the defendant has been testifying as to the fact that this company manufactures the product that is shown here without any foundation as to whether he knows this. There is no such statement on the advertisements.

Mr. Horwitz: Your Honor, please, there was evidence given here by this witness that there were other companies that manufactured this product than the defendant, and these are examples of the other.

The Court: Do you desire to cross examine on these Exhibits?

Mr. Seidler: Yes.

The Court: You will be afforded that opportunity and the Court will reserve ruling on their admissibility.

Mr. Horwitz: Do you prefer to cross examine not?

Mr. Seidler: Yes.

Further Cross-examination.

By Mr. Seidler:

Q. Referring to Exhibit Number 1 dealing with the Corning Glass Company, I note that the second and third page [fol. 132] in this group of pages which are attached together are headed "The Miller Company, Meriden Connecticut." Are they associated with them? It is a subsidiary company?

A. No, and those things are not a part of the Corning Company and probably should not be in here. They must have gotten separated from the other exhibit we had from the Miller Company.

Q. Exhibit No. 2 refers to the Kirlin Company of Detroit, Michigan. Calling your attention to Defendant's Exhibit No. 1, the fourth page, the box headed "Distributors" under Michigan, Detroit, Kirlin Company". Does the Kirlin Company manufacture its own products?

A. Yes, sir.

Q. And in addition, it is distributor for Corning products, is that correct?

A. That is correct.

Q. Now, referring to the Kirlin Company Exhibit No. 2, are you acquainted with the many and varied products that are merely listed here by catalog number?

A. In a general way, sir, yes.

Q. For example on the first page, 12-12F, photolight glass. Have you ever seen this product?

A. Yes.

Q. What is it used for?

A. It is used for general lighting purposes. Photolight [fol. 133] glass refers to a product of the Corning Glass Company.

Q. I see, and that is something they are distributing for Corning?

A. That is right.

Q. They don't manufacture that product?

A. No.

Q. Calling your attention to 12-12-L, in parentheses, E C L Louvre Door. Have you ever seen that product?

A. I don't know that I have seen that product, but from

the description, I know what it is. It is a lighting unit that employs a louvre in the door. Whether Kirlin makes every piece of a product, I don't know, but just as they do not make the photolight glass, they buy that from Corning, they make the rest of the product and assemble it in their lighting unit, pretty much as the General Electric Company, for example, in manufacturing street lighting equipment. They are distributors of Holophane refractors in their equipment, and so is the Kirlin Company for these other products that they do not manufacture, but which they purchase from Corning.

Q. Does the Holophane Company manufacture a product comparable to this 12-12-LEC Louvre Door?

A. No, it does not. It does not manufacture any metal louvres.

Q. How about the rest of the products listed on the first page? Does Holophane Company—are any of those prod- [fol. 134] ucts those which Holophane does not manufacture or sell comparable products?

A. Well, starting at the one that has the first description shock proof glass, refers to glass, refers to glass that will withstand more than ordinary types of shocks, mechanical and thermal. Holophane makes such glass.

Q. Have you ever seen this unit?

A. I can't say I have seen that actual number. I have seen generally the product of this company in lighting shows or expositions, such as are carried on in the industry, but I won't be able to identify each particular item.

Q. And there is nothing further on these sheets which would indicate the nature of the product other than in these catalog numbers and in the general description?

A. Well, there are pictures, and description.

Q. As to the picture, can you describe that? What product is that, sir?

A. Well, this top picture which shows an installation or a phantom photograph of one of Kirlins lighting units installed in a ceiling, it is to illustrate the features of this box on the outside. It has hangers which are provided in order to mount the unit in the ceiling. This is ventilated roughing box.

Q. What generally is this product?

A. A recessed lighting unit employing a prismatic lens.

[fol. 135] Q. Number 4506 or 4516 with the picture, what product is that?

A. That is an exit light.

Q. Does the Holophane Company manufacture a comparable product to that?

A. No.

Q. To save time, Mr. Keller, isn't it true that many of the products listed in this Kirlin Company catalog are—there is no comparable product manufactured by the Holophane Company?

A. That is correct.

Q. Calling your attention to Defendant's Exhibit 3, the Phoenix Glass Company, what product is illustrated there, sir?

A. The product that is illustrated here is a prismatic glass lens which is used for fluorescent lighting. There are two lenses illustrated here, one that is what we call in the industry a center section and one an end piece. The two things are different for mechanical reasons only.

Q. And those are the only two products which are illustrated in this particular catalog?

A. That is right, yes.

Q. Referring to Defendant's Exhibit No. 4, Libby-Owens-Ford Glass Company, turning to page three, LOF polished plate glass. I notice there is an illustration showing this glass in a store window, a display window. Isn't this plate glass for windows, isn't that what the product is?

[fol. 136] A. That is what the product is on that page.

Q. Is that prismatic glass?

A. No.

Q. Page five, transmatic Mirrors, is that prismatic glass?

A. No.

Q. Page six, thermopane, is that prismatic glass?

A. No.

Q. Eight and nine are also devoted to thermopane. Page ten, window glass. Is that a prismatic glass?

A. No.

Q. Page eleven, tufflex polished glass, is that prismatic?

A. May I look at it for a moment?

Q. Surely.

A. No.

Q. Page twelve, is that a prismatic glass?
A. No.
Q. Supposing you point out the prismatic glass.

The Court: I think it would shorten it, if you are going through the entire magazine.
At this time, the Court will take a ten-minute recess.

(Short recess.)

[fol. 137] Wednesday Afternoon Session
June 4, 1952

CLARENCE C. KELLER resumed the stand, and cross-examination continued:

By Mr. Seidler:

Q. Prior to the recess, Mr. Keller, you were examining Defendant's Exhibit No. 4, Libby-Owens-Ford Glass Company. Will you point out an item of prismatic glass in this catalog?
A. On page 16 there are four items which we would describe as prismatic glass. On page——
Q. Before we go further, will you explain which articles they are?
A. Yes. Articles that have the style name of Stylex, Linex, Flutex and Doublex.
Q. What are these glasses used for?
A. These glasses are used for many purposes and also used for lighting fixtures. It says so here.
Q. They are used for purposes other than lighting fixtures?
A. Yes, they are.
Q. Do you manufacture a comparable product to these?
A. We don't manufacture exactly the same thing, but we manufacture glass used in lighting fixtures.
Q. Which would be comparable to these?
[fol. 138] A. Yes, they are used for the same applications.
Q. Continue.

A. On page 18 there are hammered glass, which is described as having lenses.

Q. By having lenses, that means it is prismatic, is that right?

A. Yes.

Q. And for that purpose would that hammered glass be used?

A. That would be used in fluorescent lighting fixtures primarily. It is also used to some extent in incandescent lighting, but primarily for fluorescent.

Q. Have you seen this particular light; Libby-Owens-Ford hammered glass, in lighting fixtures?

A. Yes, I have.

Q. Continue.

A. Ribbed glass.

Q. The ribbed glass states "for factory glazing and skylights," is that right?

A. And for fluorescent lighting fixtures.

Q. Now, you manufacture a product comparable for fluorescent lighting fixtures?

A. That's correct, sir. Skytex, Industrex, Reglex.

Q. Let's take Industrex, for example.

A. Yes, sir.

Q. It states, "Uses—Primarily for factory glazing. Also [fol. 139] suitable for some types of commercial structures, fluorescent fixtures." Is that correct?

A. That's right. Sterlex.

Q. What type of product is that, sir; for what purpose is it used?

A. It is used for office partitions and general interior glazing where well-lighted privacy is needed; also for lighting fixtures.

Q. Are these the only items of prismatic glass in this catalog?

A. I believe they are, sir.

Q. Referring to Defendant's Exhibit 5, on page 4, polished wire glass. Do you make a polished wire glass?

A. No, we do not.

Q. How about page 5, improved structural corrugated glass?

A. We make corrugated glass, but it is not by that trade name or description.

Q. It is a heavy glass with one surface lightly stippled, the shadow corrugations giving the effect of a straight line pattern. What would this glass be used for?

A. Well, this particular glass is used generally for lighting and decorative effects, for interiors of offices, show rooms, banks and residences.

Q. For decorative effects?

A. For lighting and decorative effects.

[fol. 140] Q. For lighting and decorative effects. In other words, would this glass be incorporated into a lighting fixture to hang from the ceiling?

A. It has been incorporated into lighting fixtures which not only hang from the ceiling, but are recessed from the ceiling.

Q. That is the Mississippi Glass product?

A. Yes.

Q. Referring to Defendant's Exhibit No. 6, Kopp Glass. Is this a page from a magazine?

A. Yes, this is an advertisement from a magazine.

Q. Do you know which magazine?

A. Yes, it is from the magazine "Illuminating Engineering."

Q. And the date?

A. October 1951.

Q. There are three pictures on this page. Which picture shows prismatic glassware?

A. They all show some prismatic glassware.

Q. Which one, for instance in the picture on the left, is a piece of prismatic glass?

A. The so-called roundels. There are one, two, three, four pieces which would have the same function as prismatic glassware and the same effect.

Q. You say they would have the same function and same [fol. 141] effect. Are they prismatic glassware?

A. They are generally considered as such.

The Court: How are we going to keep this record straight when you say "the picture on the left."?

Mr. Seidler: There is only one picture on the left. The other two are on the right.

Q. On Defendant's Exhibit 7, Miller Lighting Company, will you point out the item of prismatic glassware?

A. There is no prismatic glass illustrated here, except in one case. That is, the second illustration indicates that it is available with Corning glass lens.

Q. In other words——

A. Corning glass lens is generally understood as prismatic glass.

Q. And, the fixture which Miller Lighting is offering here contains glass from Corning, which is the company represented in Defendant's Exhibit No. 1?

A. That's right.

Q. Referring to Defendant's Exhibit No. 8. Are you acquainted with these products exhibited here?

A. In a general way, yes. I have seen most of them at various locations. I have actually seen them in the offices of the Crouse-Hinds Company.

Q. Now, the last page, the back of the last page refers [fol. 142] to an illuminated wind cone fixture. Do you manufacture such a product?

A. No.

Q. Referring to Defendant's Exhibit No. 9. This, I take it, is a page from an advertisement?

A. Yes.

Q. And, it deals with the Grotelite prismatic reflectors?

A. That's right.

Q. And, it states, "Grotelite Prismatic Reflectors are the most effective reflectors for all caution and warning signs." Now, are those caution and warning signs which are pictured on the left of the page?

A. That's right.

Q. Do you manufacture a product comparable to that?

A. No, not any more. We used to.

Q. Referring to Defendant's Exhibit No. 10, Heyes of Wigan. Are you acquainted with this company?

A. No.

Q. Have you ever seen the product?

A. No.

Q. Do you know if the product is sold in this country?

A. I do not.

Q. It is an English company?

A. That's correct.

Q. Defendants' Exhibit No. 11, Revo Electric Co., Revo [fol. 143] industrial lighting fixtures, illustrating Catalog C.13558. Are you acquainted with this fixture?

A. I have never seen it.

Q. Are you acquainted with the company?

A. No.

Q. It identifies the product as a bulkhead fitting of aluminium alloy. Do you manufacture a comparable product?

A. We manufacture a fitting that is made of aluminium alloy and uses a prismatic refractor.

Q. Is it used in bulkhead fittings?

A. It could be used as bulkhead fitting. Bulkhead simply describes the location.

Q. Defendant's Exhibits 13, 15, 14, 12 and 16. Do you care to look over those. As I take it, all of these represent pages torn from magazines?

A. Yes.

Q. English magazines?

A. Yes, an English magazine.

Q. All from the same English magazine?

A. Yes.

Q. And, they all deal with an English product?

A. Yes.

Q. Are you acquainted with any of the products represented in any of these exhibits?

A. Not except what I read in the literature.

[fol. 144] Q. Are you acquainted with the companies that are advertising this product, any of the products listed?

A. I know in a general way that there is an Ediswan Electric and a General Electric Company Ltd. of London, but I don't know anything about the companies corporately.

Q. Defendant's Exhibit 16. What does this page represent?

A. This page is a part of an article or a paper that was given on the control of light by a lighthouse lens, and it appeared in the transactions of the British Illuminating Engineering Society, Volume 17, No. 3.

Q. Any indications who is manufacturing or selling that product?

A. No. All I know, it is not the Holophane Company.

Q. It is not the Holophane Company. Do you manufacture a lighthouse lamp or fixture?

A. No.

Q. When you say, regarding the English companies that were advertising these products, that you know nothing about them, do you know whether they make the glass, do they manufacture the glass?

A. I don't know.

Mr. Seidler: There are no further questions.

Mr. Horwitz: If Your Honor please, I offer these exhibits marked for identification as Defendant's Exhibits 1 through 16.

[fol. 145] The Court: Is there objection?

Mr. Seidler: We will not press our objection on competency inasmuch as these documents don't seem to show much, at any rate, but our objection on relevancy stands.

The Court: I don't quite understand your position. You are not objecting to their authenticity, I assume?

Mr. Seidler: We are not objecting that they are what they purport to be.

The Court: They are authentic, but you are objecting to their relevancy?

Mr. Seidler: Yes, sir.

The Court: For the same reasons as heretofore stated?

Mr. Seidler: Yes, sir.

The Court: The Court will reserve a ruling.

Redirect examination.

By Mr. Horwitz:

Q. Does the defendant have a contract agreement or understanding with any firm relating to prismatic glassware other than glassware made by the various Holophane companies?

A. No.

Q. So far as any agreement or understanding of the defendant is concerned, can any person or firm manufacture [fol. 146] prismatic glassware?

A. Yes.

Q. So far as any agreement or understanding of the defendant is concerned, can any person or firm import or export prismatic glassware?

A. Yes.

Q. Other than the various Holophane companies?

A. Yes, that's right, outside of the agreements.

Q. Do others than the defendant and the various Holophane companies import or export prismatic glassware?

A. I didn't understand the question.

Q. Do others than the co-conspirators in this cause, the English Holophane Company and French Holophane Company, import or export prismatic glassware?

Mr. Seidler: Object, Your Honor. Does the witness know the co-conspirators?

Mr. Horwitz: I mentioned them. The English Holophane Company and French Holophane Company.

A. Yes.

Q. Mr. Keller, do automobiles use prismatic glassware?

A. Yes, indeed.

Q. How many pieces of prismatic glassware is used in the ordinary automobile?

A. Well, the modern cars have a minimum of six pieces and some have more.

[fol. 147] Q. Would you say that this was one of the largest uses of prismatic glassware?

A. I would think so, yes.

Q. Does Holophane make any prismatic glassware for automobiles?

A. Not any more.

Q. Will you describe where these pieces of prismatic glassware are in the automobile?

A. Well, every car has two headlights and those are prismatic glass, every car today has two so-called parking lights, and those are prismatic glass, and I believe every car has two tail lights and those are prismatic glass. There are also other places. Some cars have prismatic glass such as the dome light in the car, but I think they all have six.

Q. I show you Defendant's Exhibit 17 for identification and ask you what it is?

A. This is the balance sheet of the Holophane Company as of June 30, 1948.

Mr. Horwitz: I offer this in evidence as Defendant's Exhibit 17.

The Court: Is there objection?

Mr. Seidler: Only on the ground of relevancy, Your Honor.

By Mr. Horwitz

Q. Mr. Keller, do you have the figure for the gross [fol. 148] sales of the defendant in glassware and fixtures for the year 1948?

A. Yes, I have. May I read them.

Q. If you need that to refresh your recollection.

A. In glassware sales for 1948 were $2,091,962.61. Fixture sales were $1,425,402.14.

Q. Those are the gross sales?

A. Gross sales.

Q. I show you Defendant's Exhibit 18 and ask you what it is?

A. This is a program of ceremonies attendant to the award of the Army and Navy "E" awarded to the Holophane Company in 1944.

Mr. Horwitz: I offer in evidence Defendant's Exhibit 18.

The Court: Is there objection?

Mr. Seidler: Your Honor, we don't see how the issues of this case make relevant whether the defendant did or did not win an Army-Navy "E". We are willing to stipulate to that.

Mr. Horwitz: If they are stipulating that they did win it, I will withdraw it.

The Court: For what purpose is it offered?

Mr. Horwitz: To show the high position of this industry [fol. 149] in defense of this country and the way it is considered by the U. S. Government, which is now attacking it.

Mr. Horwitz: I have nothing further.

Recross examination.

By Mr. Seidler

Q. Mr. Keller, you testified as to the gross sales of the company in 1948. Do you have the figures as to the gross sales in 1949?

A. Yes.

Q. Would you read those, please?

A. May I read them?

Q. Yes.

A. In 1949 gross sales in glassware, $2,154,566.22; fixtures, $1,387,784.33.

Q. Do you have the same figures as to 1950?

A. Yes.

Q. Those, please.

A. Glassware, $2,136,179.77; fixtures, $1,267,025.60.

Q. And as to 1951, sir?

A. Glassware, $2,973,520.98; fixtures, $1,704,861.32.

Mr. Seidler: Your Honor, the defendants have put in exhibits, profit and loss figures for 1948. We don't know whether those——

Mr. Broad: Just a balance sheet.

[fol. 150] Mr. Seidler: A balance sheet for 1948. We don't know whether that is typical of the company or not. We would like to submit the balance sheets of other years. Do you have those?

Mr. Broad: We have them but we don't consider them relevant.

Let the record show that the defendants produced balance sheets for Holophane Company from the year 1940 to 1951, both years inclusive.

Mr. Seidler: Your Honor, if the submission of any balance sheet is relevant, we believe that they should be submitted for a period of years, so that a fair picture will be given and not merely 1948. This case was filed at the end of 1949. There is a balance sheet effective September 30, 1949. We would like to submit in evidence the balance sheets from 1940 to 1949 as submitted by the defendant.

The Court: Is there objection?

Mr. Horwitz: May I say this. We would like to argue

the issue of relevancy the same as these other issues that were objected to. We object on the ground of relevancy.

Mr. Seidler: We would not offer these in evidence if the defendant had not offered the balance sheet for 1948.

Mr. Horwitz: That was the year in which the complaint was brought.

The Court: In other words, you are contending [fol. 151] that those other than what you have offered are not relevant, is that it?

Mr. Horwitz: No, sir. The ones I offered happen to be in the period involved in this particular complaint.

Mr. Seidler: The complaint was filed in November of 1949. Now, there is a balance sheet there which is effective September 30, 1949.

The Court: And you are offering the balance sheets from 1940 to 1949?

Mr. Seidler: To give a fuller picture. We do not believe that one year, arbitrarily selected from a group, will give a true picture.

Mr. Broad: Will you also let him state the gross sales for those years?

Mr. Hummel: I would like to expand on Mr. Seidler's proposition in respect to the remainder of these documents.

Mr. Broad: We have no objection. We withdraw our objection.

The Court: They will be admitted.

Are you still objecting to the others?

Mr. Seidler: Yes, Your Honor.

The Court: But, you are offering these?

Mr. Seidler: We are offering these solely to give a full [fol. 152] picture. We object to the relevancy of these balance statements in any way.

The Court: You are only offering them on the theory that if the others are introduced these ought to be admitted.

Mr. Seidler: Exactly, that if the 1948 is accepted as relevant then the remainder should be accepted to give a complete picture.

The Court: You have no objection?

Mr. Broad: No objection.

Mr. Seidler: But we retain—we maintain our position that the balance sheets are irrelevant.

The Court: All of them?

Mr. Seidler: All of them, Your Honor.

These will be marked for identification, please.

(Government's Exhibits 96 to 104, inclusive, were marked for purposes of identification.)

Mr. Seidler: If Your Honor please, for the record we would like to show that Defendant's Exhibit 17 and Government's Exhibits 96 through 104 inclusive, not only contain the balance sheet of the Holophane Company for the years but the profit and loss, the statements on income and surplus for the company for the respective years.

Mr. Broad: We only offered the balance sheets.

[fol. 153] Mr. Seidler: We offer in evidence, then, the balance sheet and the profit and loss statements.

Mr. Broad: Then you offer the entire document in full?

Mr. Seidler: We are willing to offer the entire document.

Mr. Broad: All right.

The Court: The Court will reserve a ruling.

Mr. Seidler: If Your Honor please, we offer in evidence Government's Exhibits 96 through 104, inclusive.

Mr. Broad: In their entirety?

Mr. Seidler: In their entirety.

The Court: It is the understanding, if the others offered by the defendant are admitted these are to be admitted?

Mr. Seidler: With that understanding, yes, sir.

No further questions.

Redirect examination.

By Mr. Horwitz:

Q. Mr. Keller, do you have the figure for glass sales of the defendant in glassware and fixtures for the years 1940 through 1951, inclusive?

A. Yes, I have.

[fol. 154] Q. Will you please read them. If you need that paper to refresh your recollection——

A. I am sure I do.

The Court: Are they not included in these exhibits?

Mr. Horwitz: No, sir.

A. 1940 glass sales $740,202.13; fixture sales $370,-803.34. 1941 glass sales $1,049,590.72; fixture sales $561,-702.44. glass sales 1942, $1,456,801.14; fixture sales $935,-

451.40; 1943 glass sales $1,538,065.08; fixture sales $1,201,-063.34. Glass sales 1944, $869,464.96; fixtures $578,206.93. 1945 glass sales $971,651.33; fixtures, $423,658.13. 1946, glass, $1,169,966.39; fixtures $711,804.87. 1947, glass, $1,-665,377.35; fixtures $1,234,023.44.

I have already given 1948 and 1949 and 1950. Shall I give those again?

Q. No.

A. 1951. I don't remember whether I gave that or not. $2,973,520.98 for glass; fixtures $1,704,861.32. The average total sales was $1,700,000.

Q. Mr. Keller, do those figures include the total, including export?

A. Yes.

Q. That's the total business of Holophane for each year?

A. That's the total business for the Holophane Company [fol. 155] for each of these years that I recited.

Mr. Horwitz: Nothing further.

Mr. Seidler: Mark these for identification as Government's Exhibits 105 and 106.

(Government's Exhibits 105 and 106 were marked for purposes of identification.)

Mr. Seidler: If Your Honor please, I offer in evidence Government Exhibit 105, a request for admissions served upon the defendant by the plaintiff in this action on May 7, 1952; and Government's Exhibit 106, the sworn statement denying certain items in request for admissions filed by the defendants on May 19, 1952.

The Court: Is there objection?

Mr. Horwitz: No, sir.

The Court: They will be admitted.

(The witness is excused.)

STIPULATION OF COUNSEL

Mr. Seidler: If Your Honor please, at this time the defense counsel and Government counsel wish to enter on the record a stipulation of facts.

We, the attorneys for the respective parties, do hereby stipulate that about 1892 Professor Andre Blondel de-

veloped a new type of prismatic glass globe in Paris, France. An American, Mr. Otis A. Mygatt, after meeting Professor Blondel, and becoming interested in this prismatic [fol. 156] glass globe, formed the Holophane Glass Company of New Jersey in 1898 to develop scientific lighting service and to manufacture and sell this new development and related developments in prismatic lighting glassware.

About 1912 Mr. Mygatt organized an English Company called Holophane Limited, and he turned over to that company all of the stock of the Holophane Glass Company. Mr. Mygatt later formed La Societe Anonyme Francaise Holophane of France. At that time he was a resident of France. At the time of the sale of the Holophane Glass Company to the American interests described below, Mr. Mygatt owned the controlling stock of Holophane Limited and of La Societe Anonyme Francaise Holophane.

In 1925 Messrs. Charles Franck and Joel B. Liberman, Americans, who were interested in the Holophane Glass Company, as manager and attorney respectively, got together a group from the management and their friends to buy the Holophane Glass Company from Holophane Limited. This purchase was accomplished in 1925.

The statement in Government's Exhibit 106 that from 1916 to 1925 Holophane Glass Company was under the management of H. Hepworth Thompson is here amplified by the fact that although Mr. Thompson of London, England was the general manager of Holophane Limited, the parent company, and Holophane Glass Company, the wholly owned American subsidiary, Charles Franck of the United States was the resident manager of the American [fol. 157] subsidiary during that period.

If Your Honor please, defense counsel and Government counsel agree that with regard to Government's Exhibits 105 and 106, and the stipulation of facts which we have just read, each reserves the right to object to items on the grounds of relevancy in our respective briefs. We reserve the right to comment in our brief on the relevancy.

This closes the Government's case.

The Court: The Government rests?

Mr. Seidler: The Government rests.

The Court: Due to the objections made to the introduction of certain exhibits in this case by counsel for the Government and the desire of counsel for the defendant to reply to those objections, do you not think it would be advisable that you file separate memoranda on those questions as soon as the case is concluded?

Mr. Horwitz: Sir, inasmuch as I don't believe it would take any extra time to incorporate those arguments in the actual briefs, I think it might be expedited if those arguments were actually put in the final briefs.

The Court: Would it alter the overall picture, assuming that they might be excluded——

Mr. Horwitz: Whatever your Honor decides.

The Court: —or admitted, whichever might happen?

[fol. 158] Mr. Seidler: We believe that might be the case.

The Court: In other words, if you should find or if you should be directed, which you will be, to submit tentative findings of fact and conclusions of law, would it not be better to clarify the record as to these exhibits before such findings are submitted to the Court?

Mr. Horwitz: Very well.

The Court: With that thought in mind, it is the opinion of the Court that you ought to furnish the Court with your objections and the authorities upon which you rely to support those objections before you file your final briefs.

Mr. Horwitz: In my recollection, we have made no objection to the Government's exhibits. They have made objections to ours which we would like to take an opportunity to reply to.

The Court: I assume you would want to file a reply to their memorandum.

Mr. Horwitz: Yes, sir, we will.

Mr. Seidler: If Your Honor please, we would like to offer to the Court our memorandum written in objection.

The Court: Have you furnished opposing counsel with a copy?

Mr. Seidler: Yes, Your Honor.

[fol. 159] The Court: How soon can you reply to that memorandum?

Mr. Horwitz: May I have twenty days to reply?

The Court: Is there objection?

Mr. Seidler: If Your Honor please, we prepared this memorandum yesterday after we received the defendant's exhibits.

The Court: I see no necessity for that much time.

Mr. Horwitz: Whatever Your Honor says.

The Court: Is there any reason why you cannot reply to it in ten days?

Mr. Horwitz: No, sir.

The Court: You will be directed to do so.

MOTION TO DISMISS COMPLAINT—RULING RESERVED

Mr. Horwitz: At this time, if Your Honor please, the defendant makes a motion to dismiss the complaint on the ground that the facts alleged and proved do not state a claim against the defendant.

The Court: Do you desire to be heard on your motion?

Mr. Horwitz: No, sir, I do not desire to be heard.

The Court: The Court will reserve a ruling on your motion.

Mr. Horwitz: Mr. Williams, will you take the witness [fol. 160] stand.

STEWART R. WILLIAMS,

being first duly sworn, was examined and testified as follows:

Direct examination.

By Mr. Horwitz:

Q. Will you please state your full name?
A. Stewart R. Williams.
Q. Your address, please?
A. 307 Granville Street, Newark, Ohio.
Q. What office do you hold in the defendant company?
A. Vice President in charge of street lighting.
Q. How many years have you been with the defendant?
A. I started with the company in 1929.
Q. And, what is your present position?
A. Vice President in charge of street lighting.
Q. Will you please state in full your qualifications for

the position which you now hold with the defendant company?

A. I am a registered professional engineer in Ohio. I have spent thirty years in the street lighting business, starting with the Westinghouse Company in 1922, on street lighting work, and joining the Holophane Company in 1929 as illuminating engineer on street lighting work.

Q. How many salesmen does the defendant company have?

A. Twenty-five in the field.

[fol. 161] Q. And, how many salesmen in the street lighting department?

A. There is only myself and one assistant.

Q. Where is the headquarters of the street lighting department?

A. At Newark, Ohio.

Q. Do you know how many companies there are in the United States that sell street lighting equipment?

A. The last figure that I recollect, there were about fifty or fifty-five engaged in the sale of some part of street lighting equipment.

Q. Will you please describe for the Court the various types of street lighting equipment in use with respect to globes?

A. You can break it down generally into two types of equipment: that which is closed and that which is open, the open being as the name implies, simply a lamp with or without a shade or reflector over it, but no enclosure around it, and over half of the lighting of the United States is with that type of equipment, in my opinion.

Q. Do you know in what percent of the total street lighting equipment in the United States Holophane glassware was used in 1948?

A. I would estimate at somewhere around two to three [fol. 162] per cent.

Mr. Hummel: Objection.

The Court: Why?

Mr. Hummel: He was asked whether he knew and he is giving his estimate in response to the question.

The Court: Yes. You may answer that question yes or no. Do you know?

The Witness: That is, I don't count them. I have statistics and data and that sort of thing as reference, but I don't go out and count them.

The Court: Qualify your witness.

My Mr. Horwitz:

Q. As an expert in the street lighting equipment field, do you have an opinion as to what percentage of the street lighting equipment in the United States Holophane glassware was used in 1948?

A. Yes, I do.

Q. What is that, please?

A. My opinion is somewhere around 3 per cent.

Mr. Hummel: I object, Your Honor. He was asked whether he had an opinion. No basis was established for determining where that opinion was formed or what his qualification is to have an opinion

The Court: Do you desire to cross examine on that phase?

[fol. 163] Mr. Hummel: If Your Honor please, no foundation has been laid as yet. I would like to hear the question over again and then perhaps I will cross examine him.

(The question was read.)

Cross -examination.

By Mr. Hummell:

Q. Do you have information concerning the total amount of glassware used in the street lighting equipment in 1948?

A. I have access to that information, yes, and I have, because of my very close field contacts, a very good idea of the amount of glassware used in that year.

Q. Was this material compiled by you?

A. It has been compiled in my department by me and my associates.

Q. By whom was that compilation made?

A. That compilation is made from talking with other experts. For example, I have access to the opinions, if you will, of some 25 or 30 men who are the recognized authorities in the United States in the street lighting field. Those

are members of public utilities operatives, city officials, consulting engineers, manufacturers.

Q. And, they turn in reports on the volume?

A. They do not turn in reports as such, but in our discussions we certainly analyze the market and express our opinions as to the size and potentiality of that market and what is being used in that market. That is part of my work. [fol. 164] The Court: Your objection is overruled.

Direct examination by Mr. Horwitz cont'd:

Q. Would the percentage be greater or less for the whole world?

A. I would say it would be much less in the whole world.

Q. Did you state among your qualifications that you were the Chairman of a society relating to——

A. No, I did not, but I have been a member of the Illuminating Engineering Society, an associate member since 1925, was elected to a full membership in 1936, and for two years was Chairman of the Street and Highway Lighting Committee of that Society. That is the largest committee of the Society, comprising some 40 members. I am at present a member of that committee and a member of the Executive Subcommittee of that committee, and chairman of the principles on street lighting sub-committee of that committee.

Mr. Horwitz: Your witness.

Mr. Hummel: Would it be agreeable if Mr. Seidler cross examined this gentleman in spite of the fact I had examined him on that one document?

Mr. Horwitz: I have no objection.

Cross-examination.

By Mr. Seidler:

Q. Mr. Williams, as I understand it, you are solely [fol. 165] concerned with the street lighting aspect of the Holophane Company?

A. That is right.

Q. What percentage of the total Holophane business is in street lighting?

A. Mr. Keller has testified and I can agree to it, about 15 per cent of our billings.

Q. In your opinion as an expert, what percentage of the total street lighting in the United States is in the form of prismatic glassware?

A. I would say that of the total number of units installed, something less than 3 per cent are refractor or prismatic types, when you speak of prismatic. Now, I would—I must take this opportunity to point out that any closed globe in today's modern market is a form of prismatic glass. If you place on the outside of a closed glass globe, if you want to call it that, a configuration, that is, a form of prismatic structure for control of light, be it in a lateral plane or a vertical plane or for the diffusion, if you will, it is precisely designed and precisely controlled. You have to distinguish, therefore, between a refractor and a globe. They are all prismatic. When I say two or three per cent, that is refractors.

Q. Mr. Williams, in 1949, in the street lighting field, is it not a fact that your distributors could feel assured [fol. 166] of meeting no competition from other prismatic manufacturers?

A. Why, of course not.

Q. It is not a fact?

A. No, sir.

Q. Has the situation changed in that respect since 1943?

A. It hasn't changed at all. Anybody could ever at any time go into the prismatic street lighting business.

Q. I hand you a letter dated January 11, 1943 on stationery of Holophane Company, Inc., Engineering Department, which purports to be from Mr. Rolph to Mr. Cameron with a copy for Mr. Williams. Can you identify this document?

A. Yes, that was—I can identify that. That was taken from our files by F.B.I. Agent Soloman, and I remember his initials, so I can identify the document.

Q. What is the document?

A. The document is a letter of January 11, 1943 entitled "Street Lighting Distributors Agreement" addressed to Mr. Cameron in our New York office, sent by Mr. Thomas W. Rolph, or T. W. Rolph, of our Newark office.

Q. Would you read the last paragraph on the second page, sir?

Mr. Horwitz: I object to that, if Your Honor please. The document speaks for itself. If there is an intention to submit it into evidence, then it can be read as an exhibit, if it is an exhibit.

[fol. 167] The Court: Is there objection to it being marked?

Mr. Seidler: None whatsoever.

The Court: It may be marked for identifications purposes and it will be admitted in evidence.

Mr. Horwitz: I would like to read it first before I agree that it be admitted.

The Court: I misunderstood you.

Mr. Horwitz: I said the proper method would be to offer it in evidence. I didn't say I wasn't offering any objection to it.

If Your Honor please, I object to this on the ground it is incompetent, irrelevant and immaterial. I can't see any connection between the contents of this and the matters in issue in the present case. It appears to be an unsigned document. I don't know where it emanated from or whether it was bound to.

Mr. Seidler: The witness has testified.

Mr. Horwitz: He testified he saw the FBI agent pull it out of the files of the defendant.

Mr. Seidler: He also testified what it was, from Mr. Rolph to Mr. Cameron with a copy for him.

Mr. Horwitz: What relation does it have to this case?

[fol. 168] Mr. Seidler: It has a direct relation to the statement made by Mr. Williams on cross examination.

Mr. Horwitz: If Your Honor please, I can't see any relevancy in this.

The Court: The Court will reserve a ruling on its admission.

This is a copy, is it not?

Mr. Seidler: It is a photostatic copy, but there is a stipulation between the parties that photostatic copies may be submitted in lieu of the originals.

The Court: Are you claiming that the entire document is admissible?

Mr. Seidler: No, only the last paragraph of the second page, Your Honor.

The Court: If properly authenticated why is not this last paragraph proper? Why is it not admissible?

Mr. Horwitz: If Your Honor please, I don't see what the fields of aviation and traffic business have to do with this particular case as compared to the street lighting field.

The Court: Might it not be a circumstance bearing upon it?

Mr. Horwitz: If Your Honor feels there is some relevancy.

[fol. 169] The Court: I think your objection will have to be overruled. The last paragraph will be admitted in evidence.

Mr. Seidler: If Your Honor please, I think it will be sufficient to have the witness read this paragraph into the record.

The Court: Why don't you read it into the record. It is in evidence.

Mr. Seidler: I quote from the last paragraph, page 2, of letter dated January 11, 1943 from Mr. Rolph to Mr. Cameron with a copy for Mr. Williams:

> "The fields of aviation and traffic lenses should also be considered. They are not quite comparable to the street lighting field in that our distributors cannot feel as well assured of meeting no competition from other prismatic manufacturers. This would call for some modification in the agreement, but I think there should be something, also, in these two fields and perhaps others.

No further questions.

Mr. Horwitz: This is in evidence, is it not?

The Court: Just the last paragraph.

Redirect examination.

By Mr. Horwitz:

Q. With reference to the last paragraph that was just [fol. 170] read, Mr. Williams, can you explain that statement?

A. Very readily. I would like to repeat that section that

I think Mr. Seidler was particularly referring to. "Cannot feel as well assured of meeting no competition from other prismatic manufacturers." I am sure what Mr. Rolph had in mind and certainly what I would have had in mind, is that the prismatic refractor market is so small in dollar volume and in any element of glass manufacture, that for years and years and years no other glass company has ever gone into it. There wasn't enough business to justify it. The market was well served and no one was interested in going into it. There is no control that we ever exerted. Just wasn't any business there.

Mr. Horwitz: Nothing further.

The Court: You are excused.

We will take a recess for five minutes.

(Recess.)

COLLOQUY BETWEEN COURT AND COUNSEL

Mr. Horwitz: If Your Honor please, the defendant rests.

The Court: Is there anything in rebuttal?

Mr. Seidler: Nothing, Your Honor.

The Court: The plaintiff rests; defendant rests. The Court, I believe, fixed the time in which you are to file your memorandums on the admissibility of the evidence upon which the Court reserved a ruling.

[fol. 171] Mr. Horwitz: Yes, sir.

The Court: The Court after receiving the briefs will determine the admissibility of these exhibits, and after that is done the Court will direct counsel for the plaintiff and counsel for the defendant to file tentative findings of fact, citing after each finding of fact the page or pages of the record which support the finding of fact, and you are also to file tentative conclusions of law, citing after each conclusion of law the authority or authorities upon which you rely to support your conclusion. Those are for the Court.

How long do you want to file these findings. How long does the Government desire?

Mr. Seidler: Would Your Honor desire the briefs to be filed at the same time?

The Court: I am not quite sure the Court made its position clear as to the directions concerning the findings of fact. I want it understood that you must be specific as to

the page or pages and the particular part of the exhibit which supports your finding, or the exhibit of record which supports your finding. In other words, the Court does not intend to examine these voluminous exhibits, except such parts as are germane to a determination of the issues of this case. It is placing the responsibility upon counsel of pointing out specifically the supporting proof [fol. 172] which you have.

Now, in that connection, do you desire to file additional briefs?

Mr. Seidler: Yes, Your Honor.

The Court: How long will you want to file your tentative findings of fact and conclusions of law and your briefs?

Mr. Seidler: To a certain extent it would depend on when we got the transcript.

The Court: The period for the filing of your briefs and findings of fact and conclusions of law will commence at the time you receive the record from the reporter.

Mr. Horwitz: If Your Honor please, I would like an opportunity to answer the Government's brief, so if I might have sometime after the-re's is submitted.

The Court: Let us first fix the time for filing. How much time will you want?

Mr. Seidler: Six weeks.

The Court: How much time will you want thereafter?

Mr. Horwitz: Thirty days.

The Court: The Government will be granted six weeks in which to file your opening brief. Defendant will be granted [fol. 173] thirty days thereafter in which to file an answering brief.

How much time do you want for a reply brief if one is deemed necessary?

Mr. Seidler: Ten days will be sufficient.

The Court: You will have ten days thereafter in which to file a reply brief.

How much time do you want to file your findings of fact and conclusions of law?

Mr. Seidler: We will file that with the brief, Your Honor.

Mr. Horwitz: And I will file mine with my brief.

The Court: It is understood that the Government will have six weeks in which to file the opening brief; you will

have thirty days in which to file an answering brief; the Government will have ten days in which to file a reply brief; and you will file your tentative findings of fact and conclusions of law at the time you file your brief, the time to commence from the date you receive the record from the reporter.

Is there anything further?

Mr. Seidler: One point. As I understand it, referring to the briefs on the admissibility——

The Court: The time has been fixed. Your brief has been filed and he is to have ten days.

[fol. 174] Mr. Seidler: May we have a few days after he files his brief in case we desire to add anything?

The Court: How much time do you want to file a reply brief?

Mr. Seidler: Three days will be sufficient, Your Honor.

The Court: You will have three days.

Now, you understand that agreement?

Mr. Seidler: Yes, Your Honor.

The Court: Let the record show that the Court will grant two weeks from today for counsel to confer in an endeavor to work out a solution to the litigation, and that the time for filing briefs will be extended by that length of time. Is that satisfactory?

Mr. Hummel: Very well. There is one point which I am not clear on. Does Your Honor desire a form of decree to be submitted with the briefs by both sides?

The Court: Yes. I assume that your findings of fact and conclusions of law will probably be all inclusive, will they not?

Mr. Hummel: You want a form of decree submitted at the time?

The Court: Yes, the Court wants your version of the ultimate in this case.

Is there anything further in connection with the case?

[fol. 175] Mr. Broad: Just to thank the Court for the Court's patience.

The Court: The Court appreciates your cooperation.

[fol. 176] GOVERNMENT EXHIBIT 1

Minutes of First Meeting of Incorporators

The first meeting of the incorporators and subscribers to the capital stock of the Holophane Illuminating Company, Inc. was held at the office of Jackson, Fuller, Nash & Brophy, No. 30 Broad Street, New York City, on the 11th day of September, 1925, at 3:30 o'clock in the afternoon.

Mr. Joel B. Liberman called the meeting to order and stated the purposes thereof.

Upon motion Mr. Charles Franck was chosen chairman of the meeting and Mr. Joel B. Liberman secretary thereof.

All the incorporators, also all the subscribers, to the capital stock of the Holophane Illuminating Company, Inc. were personally present as follows, to wit:

Name	*Shares Subscribed*
Joel B. Liberman	700 shares of common stock
Charles Franck	700 shares of common stock
John G. Jackson	20 shares of common stock

A written waiver of notice and an agreement duly signed by all the incorporators fixing the time and place of this meeting was presented by the secretary and it was ordered that a copy thereof be prefixed to the record of the minutes of this meeting.

The Chairman then presented a copy of the Certificate of Incorporation and stated to the meeting that on September 10, 1925, an original Certificate of Incorporation, duly executed and acknowledged, had been duly filed in the [fol. 177] office of the Secretary of State of Albany, N. Y.; that on September 11, 1925, a duplicate thereof had been filed and recorded in the Office of the Clerk of the County of New York; that the organization tax had been paid to the Secretary of State and that the statutory filing and recording fees had also been paid to the Secretary of State and said County Clerk, respectively.

Thereupon, upon motion duly made, seconded and carried, said Certificate of Incorporation was approved and accepted, and it was

ORDERED, that said copy of the Certificate of Incorporation be filed and that a copy thereof be prefixed to the record of the minutes of this meeting.

The chairman submitted for the consideration of the meeting the proposed By-Laws and stated that the same had been prepared by the counsel of the corporation in accordance with instructions of the incorporators.

After discussion and consideration, and by unanimous vote, it was

RESOLVED, that the By-Laws now submitted to this meeting be and hereby are adopted as the By-Laws of the Company, and that said By-Laws be prefixed to the minutes of this meeting.

The secretary presented to the meeting a written proposal from Joel B. Liberman offering to assign and transfer to this Company all of his right, title and interest in, to and under the certain contract dated the 6th day of June, 1925 made and entered into by and between Holophane Ltd. and said Joel B. Liberman, under and by the terms of which said Joel B. Liberman agreed to buy from Holophane, [fol. 178] Ltd. the Holophane Glass Company of New Jersey for the consideration and upon the terms as set forth in the said contract, in consideration of the assumption by this company of all of the obligations of said Joel B. Liberman under the said contract made by him with Holophane, Ltd. and the agreement by this company to credit him on his subscription for capital stock in this company with the sum of $25,000., representing the payment already made by him to Holophane Ltd., on account of the purchase price of said Holophane Glass Company, Inc., under said contract. It was thereupon ordered that the said proposal and said contract entered into between Holophane Ltd. and Joel B. Liberman be placed on file and that a copy thereof be prefixed to the record of the minutes of this meeting. (see page)

After a discussion and consideration of the offer made and by the affirmative vote of all present except Joel B. Liberman, he not voting, the following preambles and resolution were adopted:

WHEREAS, Mr. Joel B. Liberman has offered to transfer and assign to this company all of his right, title and interest in, to and under the certain contract made and entered into on the 6th day of June, 1925, between him and Holophane, Ltd. and under and by the terms of which said Liberman agreed to buy from said Holophane Ltd. said Holophane

Glass Company of New Jersey for the consideration and upon the terms as therein set forth, in consideration of the assumption by this company of all of the obligations of said Joel B. Liberman under said contract and the agreement by this company to credit him on his subscription for capital stock in this company with the sum of $25,000 representing the payment already made by him to Holophane Ltd., on account of the purchase price of the said Holophane Glass Company, Inc. under said contract as more fully appears in the written proposal on file in this office; and

[fol. 179] Whereas, it appears from the statements contained in the said proposal of Joel B. Liberman and the papers annexed thereto that the Holophane Glass Company, Inc., on July 1st of this year had property reasonably worth the sum of $1,260,100.77 and that on that date the company had liabilities of $62,778.38, and

Whereas, in the opinion of this Board of Directors the property of the Holophane Glass Company, Inc., is reasonably worth the figures above stated;

Now, therefore, it is

Resolved that said offer as set forth in said proposition be and hereby is approved and it is recommended that the Board of Directors accept the said proposition and authorize the assumption by this company of all of the obligations of Joel B. Liberman under his said contract with Holophane Ltd. and credit him with the sum of $25,000 upon his subscription for common stock in this company upon the proper transfer and assignment of said contract to this company by said Joel B. Liberman.

Upon motion duly adopted by the affirmative vote of all present, the following preambles and resolution were adopted:

Whereas, Otis A. Mygatt has made an offer to subscribe for and purchase all of the authorized 4,000 shares of preferred stock of this company at par for cash; and

Whereas, it is deemed for the best interests of this company that said offer be accepted;

Now, therefore,

Resolved that said offer be and is hereby approved and that the acceptance of said offer be recommended to the Board of Directors.

[fol. 180] Upon motion duly adopted by the affirmative vote of all present, the following preamble and resolutions were adopted:

Whereas, Joel B. Liberman and Charles Franck have made an offer to subscribe for and purchase 1,400 shares of common capital stock of this company for $100,000 in cash; and

Whereas, it is deemed for the best interests of this company that said offer be accepted;

Now, therefore,

Resolved that said offer be approved and that the acceptance of said offer be recommended to the Board of Directors.

Upon motion duly made, seconded and adopted by the affirmative vote of all present, it was

Resolved, that the sale of 2600 shares of the common stock of this company for cash at $100 per share be recommended to the Board of Directors.

There being no further business before the meeting, it was adjourned.

Joel B. Liberman, Secretary. Chas. Franck, Chairman.

[fol. 181] GOVERNMENT'S EXHIBIT 2

Holophane Illuminating Company, Inc.,
342 Madison Avenue,
New York City.

Gentlemen:

I desire to submit the following offer for your consideration and acceptance. I have a contract with Holophane Ltd. a British corporation, dated June 6th, 1925, a copy of which is annexed hereto, by which I have agreed to purchase and they have agreed to sell the Holophane Glass Company, Inc., a corporation organized under the laws of the State of New Jersey, for $1,000,000 cash, of which I have paid $25,000 on the signing of the contract, with interest on the balance from the day of 1925.

The purchase contract calls for reciprocal trade and pat-

ent agreements between the English and American companies of great value. The writer is also in a position to and does hereby offer you similar advantages with the French company. I desire to submit the following information with respect to values.

On July 1st, 1925, the assets of the Holophane Glass Company, Inc. were as follows:

Investments—United States and British Government Bonds	$200,000.00
Cash	91,679.92
Accounts Receivable	61,946.32
Merchandise	72,868.74
Total Current Assets	$426,489.98
Land and Buildings	150,234.57
Equipment	349,739.96
Canadian Company	28,704.27
Deferred Charges	4,931.99
Patents	360,000.00
Total Assets	$1,260,100.77

On that date the liabilities other than capital stock amounted to $62,778.38. The figures for the assets in the above statement other than those for land, buildings and equipment and patents are taken from the books of the company. The valuation of the land, buildings and equipment is based upon an appraisal made by the American [fol. 182] Appraisal Company on June 27th, 1925, a copy of which is annexed hereto. All the figures used by me are the "sound value" as determined by the American Appraisal Company. As you will see from their report the replacement value of the land, buildings and equipment is estimated at considerably above this figure.

I am enclosing a list of the patents and trade marks belonging to the company. With respect to the patents on this list, I have placed a valuation based on the number of pieces sold coming under each patent collated with reference to the number of years which each patent has to run. From time to time the engineers of the company are originating new models which are protected by patents. I have

had experience with the patent work of this company for the last twenty years and in litigation their patents have been universally sustained. The trade mark of the company is well known throughout the world and has been universally respected. I am of the opinion that the patents of the company are easily worth $300,000.

You will note that no attempt has been made to appraise the good will of the company but it stands to reason that a company which has been in business for thirty years and bears the reputation which the Holophane Glass Company does must have an asset of considerable worth in its good will. The Holophane Company was the real pioneer in the illuminating engineering field and was the prime mover in all of the lighting engineering activities which are an accepted fact today.

I hereby offer to assign and transfer to your company all of my right, title and interest under my said contract with Holophane, Ltd. in consideration of the payment of my service charges in connection with the contract and the assumption by you of all of my obligations under this contract and your agreement to credit me on my subscription for stock in your company with the $25,000 which has already been paid by me to Holophane Ltd., under said contract.

Any method of acquiring the property which is mutually agreed to by counsel will be satisfactory to me. I will use my best endeavors to secure the rights to the corporate name "Holophane Company" and believe that I will be able to do so.

If this proposition is acceptable to you I will ask you to kindly signify your consent at the foot of this letter which will constitute an agreement between us.

Very truly yours, Joel B. Liberman.

The above proposition is hereby accepted.

Holophane Illuminating Company, Inc., By Chas. Franck, Vice Pres., Paul B. Sammgox, Secretary.

[fol. 183] GOVERNMENT EXHIBIT 3

This agreement made the sixth day of June One thousand nine hundred and twenty five between Holophane Limited whose registered office is situate at Elverton Street Vincent Square Westminster S.W. (hereinafter called "the Vendors") of the one part and Joel Brandon Liberman of 36 West Forty-Fourth Street New York (hereinafter called "the Purchaser") of the other part

Whereas the Vendors hold or are entitled to the whole of the issued share capital of the Holophane Glass Company Incorporated a Company incorporated under the laws of New Jersey United States of America with a nominal capital of One hundred and Fifty thousand dollars of which Eighty-two thousand dollars has been issued (hereinafter referred to as "the American Company")

Now it is hereby agreed

1. The Vendors shall sell and the Purchaser shall purchase ALL THOSE Three thousand two hundred and eighty shares of Twenty-five dollars each of and in the American Company being the whole of the issued share capital of the said Company for the sum of One million dollars.

2. The consideration for the sale shall be paid as follows: The sum of Twenty five thousand dollars as a deposit and in part payment for the said shares on the signing of this agreement and the sum of Nine Hundred and Seventy-Five thousand dollars being the balance of the purchase price on or before the Fifteenth day of September next. The purchaser shall pay interest on the said sum of Nine hundred and seventy five thousand dollars from the Thirtieth day of June One thousand nine hundred and twenty five until the date of completion at the rate of Six per cent per annum.

3. The purchase shall be completed on or before the Fifteenth day of September next at the offices of the Hanover National Bank Nassau Street New York when the Purchaser shall pay the balance of the Purchase money and interest as aforesaid in cash or Bankers Draft approved by the Vendors and the Vendors are to hand to the Purchaser in exchange for such payment the certificate or [fol. 184] certificates for the said shares hereby agreed to be sold and to execute in favour of the Purchaser or his

nominee or nominees a proper and sufficient transfer or transfers of such shares.

4. No further issue of shares of the American Company and no distribution of dividend or bonus or (except as hereinafter provided) payments to directors or officers shall be made by the American Company before the said Fifteenth day of September One thousand nine hundred and twenty five it being the intention that the Purchaser shall have the benefit of the undivided profits and assets of the Company as at the Thirty-first day of December last and also the profits earned since that date and no sale of any asset or payment shall be made before the said Fifteenth day of September One thousand nine hundred and twenty five except:—

(a) Payments made in the ordinary course of business and to Directors or Officers of the American Company for which the American Company is liable under existing contracts

(b) The patents applications for patents and other rights trade marks agencies and assets belonging to or registered by the American Company in the Countries of South America which it is agreed shall be transferred to the Vendors by the American Company for the sum of Ten thousand dollars. All out of pocket expenses in connection with such transfer to be borne by the Vendor.

(c) Sale of merchandise made in the ordinary course of trade

5. The Vendors and the purchaser will procure the American Company on or before the Fifteen *th* day of September One thousand nine hundred and twenty five and the purchaser will also procure any Company which may be formed on or before that date for the purposes of acquiring the assets of the American Company or any part thereof to enter into an agreement with the Vendors on or before said date.

(a) To mutually communicate to each other every invention design discovery or imporvement and Trade]fol. 185[Mark relating to the product of any Holophane Company operating in the territory controlled

by the Vendors or the American Company promptly after they are made or acquired and at the expense of the party requiring the same to execute or cause to be executed or use their best endeavors to cause to be executed such proper patent and Trade Mark applications assignments and licenses as may reasonably be required for obtaining and bringing proper patent protection in the respective territories of the Vendors and the American Company for the said inventions discoveries or improvements and to use their best endeavors to cause the inventors and others in their respective employ having knowledge of the facts to sign and make all lawful oaths preliminary statements specifications and other documents for effectuating the purpose aforesaid and to give testimony in legal and other proceedings for the protection of the rights of the Vendors and the American Company in their respective territories

(b) That each Company will at all times when required by the other supply to the other Holophane products at a price equal to factory cost price plus Thirty per cent delivered at place of manufacture

(c) That each Company shall take adequate steps to prevent any exportation of Holophane products from its territory into the territory of the other Company except with the consent in writing of the other Company

(d) That each Company shall on the sale or transfer of the whole or any part of its business to any other person or corporation or on any reconstruction procure the purchaser or purchasers of the reconstructed Company to enter into an agreement with the other Company comprising all the provisions of this clause

(e) Such other stipulations as the parties hereto mutually agree upon before the said Fifteenth day of [fol. 186] September One thousand nine hundred and twenty five

In this clause

"Holophane products" means "any product sold under the "Trade Mark Holophane" and/or manufactured or sold by "either Company"

"The territory of the Vendors" means "the whole of the world except the territory of the American Company and the Republic of France and its Colonies" onies"

"The territory of the American Company" means "that part of the Continent of America north of the Panama Canal nad adjacent islands (except the West Indies), The Philippine Islands, the Republic of Cuba and the Empire of Japan"

"Factory Cost Price" means

(a) In reference to the American Company "the actual cost of producing an article in the factory excluding all expenses for office administration sales and distribution"

(b) in reference to the Vendors "the price as supplied to the Vendors by their manufacturer"

6. If the Purchaser shall fail to pay the said balance of the purchase money and interest on or before the Fifteenth day of September One thousand nine hundred and twenty five or to perform any other term of this agreement on his part his deposit shall be forfeited to the Vendors and there shall be no further claim on the purchaser for failure to purchase

7. This agreement is to be construed and take effect as a Contract made in England and the purchaser hereby submits to the jurisdiction of the High Court of Justice in England and hereby appoints William James Robinson and failing him Gillam Dyke Wansbrough both of Messrs Wansbrough, Robinson Taylor & Taylor of Lion Chambers Broad Street Bristol England for the purpose of accepting service on his behalf of any Writ notice order Judgment or other legal process or document in respect of any matter arising [fol. 187] out of this agreement and such appointment shall not be revocable and service of any document on such appointee shall be deemed to be good service on the Purchaser

for all purposes and the Purchaser elects domicile at Lion Chambers Broad Street Bristol aforesaid

This contract is conditional upon the confirmation thereof by resolution of an extraordinary general meeting of the members of the Vendor Company such confirmation to be obtained within twenty one days from the date hereof. If the contract shall not be confirmed within the time aforesaid or such extended time as the purchaser may agree the deposit shall be returned to him but without interest or costs and the contract shall be void.

As witness the hands of the parties.

For and on behalf of Holophane Limited,
(Signed) 6.6.25

Robert Woodhouse, Director
Witness to signature of Robert Woodhouse: John Sims, 62 London Wall, E.C., Solicitor.
Joel Brandon Liberman
Witness to the signature of Joel Brandon Liberman: H. Hepworth Thompson.

[fol. 188] GOVERNMENT EXHIBIT 4

This agreement made the fifteenth day of September, One thousand nine hundred and twenty-five between HOLOPHANE LIMITED, a British corporation, whose registered office is situate at Elverton Street, Vincent Square, in the City of Westminster (hereinafter called "the English Company") of the first part THE HOLOPHANE GLASS COMPANY, INC. a corporation organized under the laws of the State of New Jersey, United States of America whose registered office is situate at No. 342 Madison Avenue, in the City of New York, and HOLOPHANE ILLUMINATING COMPANY, INC., a corporation organized under the laws of the State of New York, United States of America, of the same address, (hereinafter together called "the American Companies", and separately by their respective names) of the second part

Whereas the English Company carries on the manufacture and sale of illuminating appliances under the trade mark "Holophane" and is the proprietor of the patents,

designs and trade marks, particulars of which appear in the First Schedule hereto

And whereas the English Company controls the following subsidiary Company namely:

Holophane G. m. b. H. whose registered address is Brandenburgische Strasse 18, Berlin Wilmersdorf, Germany.

And whereas the said English company and its subsidiary company own control or have an interest in the patents designs and trade marks particulars of which appear in the second part of the First Schedule hereto

[fol. 189] And whereas the Holophane Glass Company, Inc., carries on the manufacture and sale of illuminating appliances under the trade mark "Holophane" and is the proprietor of the patents and designs and trade marks particulars of which appear in the First part of the Second Schedule hereto

And whereas the Holophane Glass Company, Inc., controls the following subsidiary company namely: The Holophane Company Limited of Canada

And whereas the said Holophane Glass Company and its subsidiary company own, control or have an interest in the patents designs and trade marks mentioned in the Second Part of the Second Schedule hereto

And whereas by an Agreement dated the sixth day of June, One thousand nine hundred and twenty-five and made between the English Company of the one part and Joel Brandon Liberman of the other part for the consideration therein mentioned it was agreed that the English company should sell to the said Joel Brandon Liberman 3280 shares of 25 dollars each of and in the Holophane Glass Company, Inc., being the whole of the issued share capital of the said company and it was a term of the Agreement that the Vendors and Purchaser would procure the said company and any company formed for the purpose of acquiring the shares or assets of the Holophane Glass Company, Inc., on or before the fifteenth day of September, One thousand nine hundred and twenty-five to enter into the agreement expressed in these presents

And whereas it is proposed to merge the Holophane Glass Company, Inc., and the Holophane Illuminating Company, [fol. 190] Inc. into one corporation under the laws of the State of New York.

Now this agreement witnesseth that for the consideration aforesaid and in pursuance of the said agreement the English Company hereby for themselves and their assigns so far as the covenants agreements and provisions hereinafter contained are or ought to be performed or observed by them covenant with the American companies and their assigns and the American companies severally hereby for themselves and their assigns so far as the covenants agreements and provisions hereinafter contained are or ought to be performed and observed by them, covenant with the English company and their assigns in manner following that is to say:

1. That each of them the English company and the American companies shall communicate to the other of them every invention design discovery or improvement and trade mark relating to the aforesaid business of any of the parties hereto, their successor and or assigns promptly after they are made or acquired and shall at the expense of the party requiring the same execute or cause to be executed or use their best endeavors to cause to be executed such proper patent and trade mark applications, assignments and licenses as may reasonably be required for obtaining and bringing proper patent design and trade mark protection in the respective territories of the English company and the American companies for the said inventions discoveries improvements patent designs or trade marks and shall use [fol. 191] their best endeavors to cause the inventors and others in their respective employ or in the employ of their respective subsidiary companies having knowledge of the facts to sign and make all lawful oaths preliminary statements specifications and other documents for effectuating the purpose aforesaid and to give testimony in legal and other proceedings for the protection of the rights of the English Company and the American companies in their respective territories.

No company or agent controlled by the American companies shall apply for or obtain any patent or trade mark protection in territory of the English company or carry on trade in that territory in the business aforesaid or any business similar thereto except at the request of and for the benefit of the English company. No company controlled by the English company shall apply for or obtain any pat-

ent or trade mark protection in the territory of the American companies or carry on trade in that territory in the business aforesaid or any business similar thereto except at the request and for the benefit of the American companies.

3. That each of them the English company and the American companies shall at all times when required by the other supply to the other Holophane products at a price equal to factory cost plus 30 per cent delivered at place of manufacture.

4. That each of them the English company and the American companies shall take all adequate steps and will use every means in their power to prevent any exportation from its territory into the territory of the other company of [fol. 192] products sold or manufactured by either company except with the consent in writing of the other company.

5. That each of them the English company and the American companies shall on the sale or transfer of the whole or any part of its business or a controlling interest in the stock of any subsidiary company not a party to this agreement to any other person or corporation or on any reconstruction procure the purchaser or purchasers or the reconstructed company or such subsidiary company enter into an agreement with the other company comprising all the provisions of this agreement including this clause.

6. In this Agreement

"The English Company and The American Companies include their respective assigns where the context so requires or admits

"Holophane products" means any product sold under the Trade Mark or Trade Name "Holophane" and/or manufactured or sold by either company

"The territory of the English company" means the whole of the world except the territory of the American companies and the Republic of France and its Colonies

"The territory of the American companies" means that part of the Continent of America north of the Panama Canal and adjacent Islands (but not including the West Indies) The Philippine Islands, the Republic of Cuba and the Empire of Japan.

"Factory Cost Price" means (a) in reference to the

American companies "the actual cost of producing an [fol. 193] article in the factory excluding all expenses for office administration sales and distribution (b) in reference to the English company the price as supplied to the English company by their manufacturer"

In witness whereof the American companies have caused these presents to be signed, sealed and delivered by their vice-president and duly attested by their Secretaries, the day and year first above written.

In witness whereof the English company has caused these presents to be signed and delivered by its Managing Director, in accordance with a power of attorney executed the 27th day of August, 1925, a copy of which is annexed hereto, the original being on file with the Bank of New York and Trust Company, 52 Wall Street, New York, N. Y., the day and year first above written.

HOLOPHANE LIMITED,
H. Hepworth Thompson,
Managing Director
Witness: /S/ Alma L. Rustin

HOLOPHANE GLASS COMPANY, INC.
/s/ Charles Franck,
Vice-President
Attest: Seal /S/ Joel B. Liberman, Secretary

HOLOPHANE ILLUMINATING COMPANY, INC.
/s/ Charles Franck,
Vice-President
Attest: Seal /S/ Joel B. Liberman, Asst. Secretary

[fol. 194] State of New York,
County of New York, ss.

On this 15th day of September, 1925 before me personally came H. Hepworth Thompson to me known, who, being by me duly sworn did depose and say that he resided in Elverton St., Vincent Sq., Westminster, London, England. That he is the Managing Director of Holophane Limited, the corporation described in and which executed the above contract; that he signed the said contract by virtue of a power of attorney dated August 27, 1925, from the said

company to him authorizing him to enter into and to execute an agreement with the American company and its subsidiary company in Canada and/or any other company which may be formed before the 15th September, 1925 for the purpose of acquiring the whole or any part of the assets of the American company containing the terms set out in the hereinbefore recited agreement with such modifications and further terms as he shall think proper; a copy of which power is annexed hereto and made part hereof the original being on file with the Bank of New York and Trust Company of 52 Wall Street, New York, N. Y., U. S. A.; that he further says that the contract herein is in proper form and context.

Alma L. Rustin, Notary Public. Notary Public Kings County. Kings Co. Clks. No. 283 Reg. No. 6252, N. Y. Co. Clks. No. 622, Reg. No. 6443. Commission Expires March 30, 1926

State of New York,
County of New York, ss.

On this 15th day of September, 1925 before me personally came Charles Franck to me known, who, being by me duly sworn, did depose and say that he resided in Larchmont, in the county of Westchester and State of New York, United States of America, that he is the Vice-President of Holophane Glass Company, Inc., the corporation described in and which executed the above contract; that he knew the seal of said corporation; that the seal affixed to said contract was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name and the name of said corporation thereto by like order.

Alma L. Rustin, Notary Public. Notary Public Kings County. Kings Co. Clks. No. 283 Reg. No. 6252, N. Y. Co. Clks. No. 622, Reg. No. 6443. Commission Expires March 30, 1926

[fol. 195] State of New York,
County of New York, ss.

On this 15th day of September, 1925 before me personally came Charles Franck to me known, who, being by me duly sworn, did depose and say that he resided in Larchmont, in the county of Westchester and State of New York, United States of America, that he is the Vice-President of Holophane Illuminating Company, Inc., the corporation described in and which executed the above contract; that he knew the seal of said corporation; that the seal affixed to said contract was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name and the name of said corporation thereto by like order.

Alma L. Rustin, Notary Public. Notary Public Kings County. Kings Co. Clks. No. 283 Reg. No. 6252, N. Y. Co. Clks. No. 622, Reg. No. 6443. Commission Expires March 30, 1926

[fol. 196]

THE FIRST SCHEDULE above referred to

PART 1

GREAT BRITAIN			
	Patents	20222/09	
		13597/10	
		13598/10	
		28182/10	
		28498/13	
		188051	
		4677/14	
		194775	
		211757	
		207753	
		211044	
		207754	
		217539	
		116399	
		111986	
		114988	
		112738	
		113063	
		117832	
		115370	
		213843	
	Trade Marks	215730	"Holophane"
		215063	"Holophane Ld" round angular device
AUSTRIA			
	Patents	55406	
		47495	
		91304	
		93018	
	Trade Mark	32942	"Holophane"
BELGIUM			
	Patents	226880	
		245987	
		286229	
		286233	
		286228	
		286232	
		286231	
		288746	
		286230	
		312840	
	Trade Marks	10300	"Holophane"
		32942	"Holophane"

[fol. 197]

CZECHO-SLOVAKIA			
	Patents	47495	
		10233	
		10449	
		10450	
		8620	
		12204	
		14299	
	Trade Mark	32942	"Holophane"
DENMARK			
	Patents	15591	
		28821	
		29549	
	Trade Mark	229	"Holophane"
HOLLAND			
	Patents	10629	
		10631	
		10880	
		11129	
		11244	
		11581	
		12480	
HUNGARY			
	Patents	54429	
	Trade Marks	15553	"Holophane"
		32942	"Holophane"
ITALY			
	Patents	188745	
		188742	
		188743	
		216875	
		223864	
		223865	
		235245	
	Trade Marks	Vol. 5 No. 3640	"Holophane"
		32942	"Holophane"
JUGO-SLAVIA			
	Patents	1171	
NORWAY			
	Patents	21667	
		38369	
		36544	
		32414	

[fol. 198]

PORTUGAL			
	Trade Mark	32942	"Holophane"
ROUMANIA			
	Trade Mark	32942	"Holophane"
SPAIN			
	Patents	48335	
		84133	
		86487	
	Trade Mark	32942	"Holophane"
SWEDEN			
	Patents	35682	
		57105	
	Trade Mark	10544	"Holophane"
SWITZERLAND			
	Patent	106652	
	Trade Mark	32942	"Holophane"
AUSTRALIA			
	Patents	18833	
		18413	
		18415	
		18416	
		3833	
		3832	
		3834	
		10216	
		17884	
	Trade Marks	10474	"Holophane"
		10475	"Holophane"
		10476	"Holophane"
SOUTH AFRICA			
	Patents	4706/10	
		1351	
		1353	
		887	
		888	
		1071	
	Trade Mark	2842	"Holophane"

[fol. 199]

INDIA			
	Patents	378/10	
		6409	
		6407	
		8761	
	Trade Mark	3640	"Holophane"
NEW ZEALAND			
	Patent	28223	
	Trade Marks	7437	"Holophane"
		7438	"Holophane"
		7439	"Holophane"
BRAZIL			
	Trade Mark	9380	"Holophane"
VENEZUELA			
	Trade Mark	1083	"Holophane"
PERU			
	Trade Mark	539	"Holophane"
ARGENTINE			
	Trade Marks	23670	
		46075	
CHILE			
	Trade Mark	18131	"Holophane"
URUGUAY			
	Trade Mark	9141	"Holophane"
		PART II	
GERMANY			
	Patents	277722	
		384486	
		384845	
		365069	
	Trade Mark	165801	"Holophane"

[fol. 200]

SCHEDULE TWO above referred to

PART I

UNITED STATES OF AMERICA

Patent Numbers

915,056	
925,824	
935,220	
939,062	
957,703	
13,293	(Reissue)
967,029	
976,681	
988,488	
1,019,179	
1,041,329	
1,042,412	
1,042,463	
1,043,787	
1,061,000	
13,600	(Reissue)
1,090,076	
1,092,114	
1,093,350	
1,093,719	
1,097,042	
1,097,349	
1,101,035	
1,105,038	
1,111,400	
1,120,963	
1,149,208	
1,155,000	
1,157,953	
1,178,337	
1,226,609	
1,236,594	
1,259,492	
1,259,493	
1,282,617	
1,359,493	
1,387,474	
1,420,977	
1,426,280	
1,459,325	
1,470,602	
1,472,639	
1,475,260	
1,488,926	
1,492,020	
1,498,214	
1,523,734	
1,554,563	

Design Patents

42,420
42,421
42,422
43,965
44,613
45,618

[fol. 201]

Design Patents, Con't

45,949
45,569
46,004
46,058
46,098
46,290
46,291
46,347
56,656
57,618
61,906
62,187
67,828

Pending Patent Applications

Inventor	Title	Filing Date	Serial No.
William A. Dorey	Luminaires	March 11, 1925	14,646
William A. Dorey	Luminaires	October 28, 1924	746,272
William A. Dorey	Luminaires	October 31, 1923	671,919
William A. Dorey	Luminaires	October 21, 1924	744,882
William A. Dorey	Luminaires	February 9, 1924	691,583
W. A. Dorey & W. A. Ingler	Luminaires	August 15, 1924	732,175
H. L. Jenkins & W. A. Ingler	Lighting Unit	December 16, 1924	756,180
Williard Thompson	Illuminating Appliance	July 16, 1923	651,838
Henry Logan	Color Chart	February 23, 1924	694,495
Ernest Stroud	Illuminating Appliance	February 9, 1924	691,542
William A. Dorey	Luminaires	March 26, 1924	701,970

Trade Marks

Trade Mark No.	Trade Mark
183,098	Twilite
179,827	4-way
179,814	2-way
150,406	Apollo
150,405	Filterlite
150,404	Datalog
141,968	Velvet Finish
141,967	Satin Finish
133,430	Reflector Refractor
131,997	Within the Law
126,599	Superficiency
112,669	Decolite
103,692	Xtraficiency
103,695	Realite
88,491	Holo
78,713	Razldazl
78,712	Polar
78,711	Prismolier
78,710	Lunar

[fol. 202]

78,709	Flecfrac
33,808	Engineering of Illumination
53,807	The Illuminating Engineer
53,806	Light Versus Illumination
39,450	Mitched Disk
37,766	Pagoda
37,765	Pagoda
27,112	Holophane

PART II

CÁNADA

Patent Numbers	250,338	
	250,337	
	248,013	
	248,012	
	246,573	
	239,253	
	235,992	
	224,657	
	224,314	
	218,922	
	216,846	
	212,196	
	208,859	
	192,557	
	190,863	
	187,650	
	185,321	
	180,126	
	175,615	
	128,872	
	138,564	
	128,871	
	132,664	
	128,870	
	125,629	
	125,630	
	135,628	
Trade Marks	No. 24	Folio 5684
	No. 56	Folio 13633
	No. 92	Folio 22222
	No. 126	Folio 29103
	No. 130	Folio 29972
	No. 130	Folio 29973
	No. 140	Folio 31836
	No. 163	Folio 36541
	No. 163	Folio 36540

[fol. 203-204] GOVERNMENT EXHIBIT 5

The regular monthly meeting of the Board of Directors of the Holophane Glass Company, Inc., was held at the office of the company, 342 Madison Avenue, on Tuesday, February 9th, at 9:45 A.M. There were present:

Messrs. Charles Franck, Joel B. Liberman, J. Louis Van Zelm, Helmuth M. Kiesewetter, Alma L. Rustin, Secretary.

Mr. Franck, the Vice-President, called the meeting to order.

Last Meeting: The minutes of the last monthly meeting of the Board held December 10th, 1925 and the special meeting held on December 28th, 1925 were read and approved.

Patent Agreement with French Company: The patent and manufacturing agreement as prepared by Mr. Liberman, similar to that existing between Holophane Ltd. of London and the company was presented to the meeting. Upon motion of Mr. Kiesewetter, seconded by Mr. Van Zelm, Mr. Liberman was duly authorized to forward the contract for signature to Societe Holophane.

South America: Numerous inquiries from the I. G. E. Co. and Westinghouse Company with reference to South American requirements were presented and discussed. Mr. Franck stated the position of the company and read various letters from the British and French companies. On motion of Mr. Kiesewetter, seconded by Mr. Van Zelm, Mr. Liberman was authorized to write to the French company outlining our position with reference to data other than patent and regular order requirements.

Groome Stock: The action of Mr. Franck, as vice-president and Mr. Liberman as treasurer in issuing to Mr. Groome in pursuance of his contract a certificate for 5 shares of the Holophane Glass Company, on receipt of a remittance of $500 from the Canadian Company to pay for such shares was approved.

Thompson contract: Mr. Liberman stated that Mr. F. S. McGrath had telephoned a suggestion of possible settlement of the Thompson salary claim. When investigated this proved to be an offer on Mr. McGrath's part to submit a figure. A communication of the proposition to each of the

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[fol. 205] GOVERNMENT EXHIBIT 6

This agreement made as of the fifteenth day of September, One thousand nine hundred and twenty-five between SOCIETE ANONYME FRANCAISE, a French company, whose registered office is situated at 156 Boulevard Haussman (8) in the City of Paris (hereinafter called "the French Company") of the first part, and the HOLOPHANE GLASS COMPANY, INC., a corporation organized under the laws of the State of New York, United States of America, whose registered office is situated at 342 Madison Avenue, in the City of New York (hereinafter called "the American Company") of the second part.

Whereas the French Company carries on the manufacture and sale of illuminating appliances under the trade mark "Holophane" and is the proprietor of the patents, designs and trade marks, particulars of which appear in the First Schedule hereto

And whereas the French Company controls the following subsidiary Companies, namely:

And whereas the said French Company and its subsidiary companies own control or have an interest in the patents designs and trade marks particulars of which appear in the first part of the First Schedule hereto

And whereas except for the Republic of France and its Colonies, all matters described in and pertaining to this contract have been and are fully regulated by a certain contract between the American Company and Holophane Limited, a British corporation

[fol. 206] And whereas the American Company carries on the manufacture and sale of illuminating appliances under the trade mark "Holophane" and is the proprietor of the patents and designs and trade marks particulars of which appear in the First Part of the Second Schedule hereto

And whereas the American Company controls the following subsidiary company namely: The Holophane Company Limited of Canada

And whereas the said American Company and its subsidiary company own, control or have an interest in the patents designs and trade marks mentioned in the Second Part of the Second Schedule hereto

Now this agreement witnesseth that in consideration of the payment of ten dollars by each of the parties hereto

receipt of which is hereby acknowledged and further in consideration of the mutual covenants and agreements herein contained, the French Company hereby for themselves and their assigns so far as the covenants agreements and provisions hereinafter contained are or ought to be performed or observed by them covenant with the American Company and their assigns and the American Company hereby for themselves and their assigns so far as the covenants agreements and provisions hereinafter contained are or ought to be performed and observed by them, covenant with the French Company and their assigns in the manner following that is to say:

1. That each of them the French Company and the American Company shall communicate to the other of them every invention design discovery or improvement and trade mark relating to the aforesaid business of any of the parties [fol. 207] hereto, their successor and/or assigns promptly after they are made or acquired and shall at the expense of the party requiring the same execute or cause to be executed or use their best endeavors to cause to be executed such proper patent and trade mark applications, assignments and licenses as may reasonably be required for obtaining and bringing proper patent design and trade mark protection in the respective territories of the French Company and the American Company for the said inventions discoveries improvements patents designs or trade marks and shall use their best endeavors to cause the inventors and others in their respective employ or in the employ of their respective subsidiary companies having knowledge of the facts to sign and make all lawful oaths preliminary statements specifications and other documents for effectuating the purpose aforesaid and to give testimony in legal and other proceedings for the protection of the rights of the French Company and the American Company in their respective territories.

2. No company or agent controlled by the American Company shall apply for or obtain any patent or trade mark protection in territory of the French Company or carry on trade in that territory in the business aforesaid or any business similar thereto except at the request of and for the benefit of the French Company. No company controlled by the French Company shall apply for or obtain any patent

or trade mark protection in the territory of the American Company or carry on trade in that territory in the business aforesaid or any business similar thereto except at the request and for the benefit of the American Company.

[fol. 208] 3. That each of them the French Company and the American Company shall at all times when required by the other supply to the other Holophane products at a price equal to factory cost plus 30 per cent delivered at place of manufacture.

4. That each of them the French Company and the American Company shall take all adequate steps and will use every means in their power to prevent any exportation from its territory into the territory of the other company of products sold or manufactured by either company except with the consent in writing of the other company.

5. That each of them the French Company and the American Company shall on the sale or transfer of the whole or any part of its business or a controlling interest in the stock of any subsidiary company not a party to this agreement to any other person or corporation or on any reconstruction procure the purchaser or purchasers or the reconstructed company or such subsidiary company to enter into an agreement with the other company comprising all the provisions of this agreement including this clause.

6. In this Agreement

"The French Company and The American Company include their respective assigns where the context so requires or admits.

"Holophane products" means any product sold under the Trade Mark or Trade Name "Holophane" and/or manufactured or sold by either company.

"The territory of the French Company" means the Republic of France and its Colonies.

"The territory of the American Company" means [fol. 209] that part of the Continent of America north of the Panama Canal and adjacent Islands (but not including the West Indies) The Philippine Islands, the Republic of Cuba and the Empire of Japan.

"Factory Cost Price" means the actual cost of producing an article in the factory excluding all expenses for office administration sales and distribution.

In witness whereof the American Company has caused these presents to be signed, sealed and delivered by their Vice-President and duly attested by the Secretary this 29th day of June 1926.

In witness whereof the French Company has caused these presents to be signed and delivered by their L'Administrateur-Delegue and duly attested by their Secretary this 19th day of June 1926.

Societe Anonyme Francaise Holophane, L'Administrateur-Delegue Andre Froget

Attest ——— ———, Secretary.

Holophane Glass Company, Inc., Charlés Franck, Vice-President.

Attest: Alma L. Rustin, Secretary.

[fol. 210] United States Consulate General
Republic of France,
City of Paris, ss.

On this 19th day of June 1926 before me personally came Andre Froget to me known, who, being by me duly sworn did depose and say that he resided in Paris, France 156 Bd Haussmann VIII. That he is the L'Administrateur-Delegue of Societe Anonyme Francaise Holophane.

George Orr, Consul of the United States of America at Paris France

State of New York,
County of New York, ss.

On this 29th day of June 1926 before me personally came Charles Franck to me known, who, being by me duly sworn, did depose and say that he resided in Larchmont, in the county of Westchester and State of New York, United States of America, that he is the Vice-President of Holophane Glass Company, Inc., the corporation described in and which executed the above contract; that he knew the seal of said corporation; that the seal affixed to said contract was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name and the name of said corporation thereto by like order.

Lily S. Kirshner, Notary Public.

[fol. 211]

Schedule 1—Part 1

Denomination	TITRE	France
Stiletto	Enveloppes ou vases en verre moulé à la presse. Priorité E.U. 1/7/09	
Conceald Shoulder.	Globe reflecteur.	
Razzle	Enveloppes ou vases en verre transparent.	
Argenté, pressé soufflé	Perfectionnements aux reflecteurs et diffuseurs argentés. Priorité 3/4/13.	476.092 3/4/14
Extérieur á une reflex	Reflecteur pour l'éclairage.	477.985 10/7/14
Prismes horz. inter. protégé Dome refract.	Perfectionnements aux verreries d'éclairage. Priorité E.U. 31/12/15	516.746 10/6/20
Reflector Refractor.	Perf. aux verreries à prismes pour l'éclairage. Priorité E.U. 7/8/17.	514.529 26/4/20
Ecrou d'attache.	Appareil d'éclairage. Priorité E.U. 14/8/17.	514.074 19/4/20
Bande Refractor.	Perfectionnements aux verreries prism. pour éclairage. Priorité Angl. 26/7/17.	516.747 10/6/20
Vitrine	Perfectionnements aux verreries d'éclairage. Priorité 3/5/17.	514.072 19/4/20
Prismes at métal.	Perfectionnements aux reflecteurs. Priorité 23/2/14.	514.073 19/4/20
2éme Vitrine	Reflecteur. Correspond á E.U. 24/3/20.	541.733 28/9/21
Luxmètre	Photomètre (Blondel).	461.891 8/11/12
Eclairage asymètrique	Verrerie Prismatique double pour l'éclairage. Priorité E.U. 12/16/23.	569.688 11/8/23
Refracteur type Nord.	Perf. dans les ver. d'éclairage à prism. horiz. réfractants.	574.710 18/12/23
Lanterne polygonale	Perf. dans les appareils d'éclairage á glaces prismatiques superposées. Première addition. Priorités E.U. 9/2/24–26/3/24.	588.760 10/11/24 29.647 10/11/24
Glaces de phare à zone centrale à prismes plus forts.	Perfectionnements dans les glaces prismatiques de phares d'automobiles.	592.618 4/2/25

[fol. 212]

Denomination	TITRE	France
Glace de phare pour filament excentré.	Perfectionnements dans les phares d'éclairage d'automobiles.	595.936 30/3/25
Dome asymétrique.	Verrerie double pour l'éclairage desrues, avec éclairage atténué des maisons. (Priorité E.U. 21/10/24).	24/6/25
Reflecteur de vitrine à diamètre réduit.	Appareill d'éclairage principalement pour éclairage de vitrines. (Priorité E.U. 21/10/24).	24/6/25
Reflecteur de couloir.	Appareil d'éclairage pour couloirs. Priorité E.U. 28/20/24.	24/6/25
Denomination	TITRE	France
Denomination	TITRE	France

(Here follows 1 photo, side folio 213)

1401

LISTE DES MARQUES

de la

SOCIETE ANONYME FRANCAISE HOLOPHANE

19 Octobre 1925

DESIGNATION DES MARQUES	FRANCE	ANGLETERRE	INTERNATIONALE
Verrerie du Andelys HOLOPHANE	207.006 31 Décembre 1921	431.595 16 Novembre 1922	22.821 2 Décembre 1922
	207.007 31 Décembre 1921		
E H	232.815 25 Mai 1925		
L'ECLAIRAGE HOLOPHANE			
G H	232.812 25 Mai 1925		
L'HOLOPHANE			
CALLOPHANE	232.813 25 Mai 1925		
G H	232.814 25 Mai 1925		
MAZDA (Vignette)	125.483 11 Janvier 1911		10.300 30 Janvier 1911
IFTENSIF (Vignette)	156.187 15 Mai 1914		
EXTENSIF (Vignette)	156.188 15 Mai 1914		
FOCUSSING (Vignette)	156.189 15 Mai 1914		
HOLOPHANE	156.190 15 Mai 1914		

[fol. 214]

Schedule 1—Part 2

LISTE DES MODELES DE LA
SOCIETE ANONYME FRANCAISE HOLOPHANE

19 Octobre 1925

Désignation des modèles	France	Suisse	Portugal	Espagne
Globe double à prismes intérieurs pour l'éclairage. REFRACTOR.	13.900 8/11/22	34.461 12/1/23	849 13/5/24	3/327 18/1/24
Reflecteur prismatique à double verrerie.	15.328 20/10/23			3.522 5/5/24
Verrerie prismatique Bandes Refractors.	15/557 2/4/24			3/668

[fol. 215]

SCHEDULE TWO above referred to

PART I

UNITED STATES OF AMERICA

Patent Numbers	915,056	
	925,824	
	935,220	
	939,062	
	957,703	
	13,293	(Reissue)
	967,029	
	976,681	
	988,488	
	1,019,179	
	1,041,329	
	1,042,412	
	1,042,463	
	1,043,787	
	1,061,000	
	13,600	(Reissue)
	1,090,076	
	1,092,114	
	1,093,350	
	1,093,719	
	1,097,042	
	1,097,349	
	1,101,035	
	1,105,038	
	1,111,400	
	1,120,963	
	1,149,208	
	1,155,000	
	1,157,953	
	1,178,537	
	1,226,609	
	1,236,594	
	1,259,492	
	1,259,493	
	1,282,617	
	1,359,493	
	1,387,474	
	1,420,977	
	1,426,280	
	1,459,325	
	1,470,602	
	1,472,639	
	1,475,260	
	1,488,926	
	1,492,020	
	1,498,214	
	1,523,734	
	1,554,563	
Design Patents	42,420	
	42,421	
	42,422	
	43,965	
	44,613	
	45,618	

[fol. 216]

Design Patents, Con't

45,949
45,569
46,004
46,058
46,098
46,290
46,291
46,347
56,656
57,618
61,906
62,187
67,828

Pending Patent Applications

Inventor	Title	Filing Date	Serial No.
William A. Dorey	Luminaires	March 11, 1925	14,646
William A. Dorey	Luminaires	October 28, 1924	746,272
William A. Dorey	Luminaires	October 31, 1923	671,919
William A. Dorey	Luminaires	October 21, 1924	744,882
William A. Dorey	Luminaires	February 9, 1924	691,583
W. A. Dorey & W. A. Ingler	Luminaires	August 15, 1924	732,175
H. L. Jenkins & W. A. Ingler	Lighting Unit	December 16, 1924	756,180
Williard Thompson	Illuminating Appliance	July 16, 1923	651,838
Henry Logan	Color Chart	February 23, 1924	694,495
Ernest Stroud	Illuminating Appliance	February 9, 1924	691,542
William A. Dorey	Luminaires	March 26, 1924	701,970

Trade Marks

Trade Mark No.	Trade Mark
183,098	Twilite
179,827	4-Way
179,814	2-Way
150,406	Apollo
150,405	Filterlite
150,404	Datalog
141,968	Velvet Finish
141,967	Satin Finish
133,430	Reflector Refractor
131,997	Within the Law
126,599	Superficiency
112,669	Decolite
103,692	Xtraficiency
103,693	Realite
88,491	Holo
78,713	Razldazl
78,712	Polar
78,711	Prismolier
78,710	Lunar

[fol. 217]

Trade Marks (Continued)

78,709	Flecfrac
53,808	Engineering of Illumination
53,807	The Illuminating Engineer
53,806	Light versus Illumination
39,450	Nitched Disk
37,766	Pagoda
37,765	Pagoda
27,112	Holophane

PART II

CANADA

Patent Numbers	250,338	
	250,337	
	248,013	
	248,012	
	246,573	
	235,992	
	239,253	
	224,657	
	224,314	
	218,922	
	216,846	
	212,196	
	208,859	
	192,557	
	190,863	
	187,650	
	185,321	
	180,126	
	175,615	
	128,872	
	136,564	
	128,871	
	132,664	
	128,870	
	125,629	
	125,630	
	125,628	
Trade Marks	No. 24	Folio 5684
	No. 56	Folio 13633
	No. 92	Folio 22222
	No. 126	Folio 29103
	No. 130	Folio 29972
	No. 130	Folio 29973
	No. 140	Folio 31836
	No. 163	Folio 36541
	No. 163	Folio 36540

[fol. 218] GOVERNMENT'S EXHIBIT 7

Holophane Limited

AGREEMENTS

with the French Company and English Company

	Page
May 24th 1921	1
January 28th 1927	5
February 25th 1929	8
December 7th 1936	11
March 1st 1940	13

[fol. 219] "A"

An agreement made the 24th day of May one thousand nine hundred and twenty one between HOLOPHANE LIMITED whose registered offices are situated at No. 12 Carteret Street Westminster (hereinafter called "the English Company") and The Scoiete Anonyme Francaise Holophane (hereinafter called "the French Company" which expression shall include its permitted assigns unless such construction is excluded by the context or is otherwise inconsistent with the provisions hereinafter contained) whereas the English Company carries on the manufacture and sale of p4ismatic glassware used for illuminating purposes and is the proprietor of patents designs and trade marks in the countries of Belgium Spain Portugal Switzerland and Italy particulars of which appear in the First Schedule hereto and whereas the French Company is a company formed under the laws of the Republic of France with a capital of Five million francs divided into ten thousand shares of five hundred francs each and whereas the Company has agreed to grant to the French Company a license for making using and vending in accordance with the English Company's existing patents or such patents as the English Company may during the continuance of this agreement hereafter acquire by itself or its Agents the inventions articles and wares as the same are made or used by the English Company in the United Kingdom within the aforesaid countries of Belgium Italy Spain Portugal and Switzerland upon the

terms and conditions hereinafter contained and whereas upon treaty for the said License it was agreed that so long as the License intended to be hereby granted or any renewed License granted in accordance with the provisions hereinafter contained remained in force at least one person nominated by or on behalf of the English Company should be on the Board of Management of the French Company now it is witnessed that in pursuance of the agreement and in consideration of the royalties and payments hereinafter reserved and made payable to the Company and of the covenants and agreements on the part of the French Company hereinafter contained the English Company doth hereby grant unto the French Company and its permitted assigns the full license during the term of five years from the first day of January One thousand nine hundred and twenty to use and exercise the said inventions and the trade name of Holophane for the purpose of Manufacture of the said articles and wares in accordance with the said inventions within the countries of Belgium Italy Spain Portugal and Switzerland And also the sole full and exclusive license to sell within the countries of Belgium Italy Spain Portugal and Switzerland all glassware manufactured within the limits and according to the said inventions during the said term and it is hereby mutually covenanted and agreed between nad by the said respective parties hereto.

Royalties.

1. The French Company shall pay to the English Company during the said term a royalty (hereinafter referred to as the "sales royalty") at the rate of three per cent on the sale prices received by the French Company from the sales of all glassware made in accordance with the patents specified in the first schedule hereto or which may hereafter be acquired and of all prismatic glassware (whether or not the subject of the one of patents hereby licensed) within the countries aforesaid. The said royalty shall be paid quarterly on the first day of May, the first day of August, the first day of November, and the first day of February, the first payment to be made on the first day of May One thousand nine hundred and twenty one: Provided always that in any year in which the sales royalty shall fall below the amount set out in the second column of the second Schedule hereto

for such year the French Company shall pay to the English Company the minimum amount for the year in which such deficiency shall occur set out in the Said Second Schedule. For the purpose of this clause the words "sale prices" shall mean the price received or receivable from customers after deducting all usual trade discounts (other than discounts for cash) and returns. The French Company shall in every year during the continuance of this license in which the [fol. 220] French Company shall declare or pay a dividend or dividends to its shareholders pay to the English Company by way of additional Royalty (hereinafter referred to as "the Profits Royalty") a sum equal to the dividend or dividends so declared or paid on five hundred shares of five hundred francs each in the capital of the French Company and such additional royalty shall be payable on the quarterly day hereinbefore named immediately following the declaration or payment of such dividend: Provided always the French Company having before the execution of these presents paid to the English Company the sum of four hundred pounds the said sum shall be retained by the English Company in full satisfaction and discharge of the sales royalty and the profits royalty for the year ending the Thirty first day of December One thousand nine hundred and twenty. Provided also that if this License shall not be renewed in pursuance of clause 16 hereof the French Company shall pay to the English Company the sum of Four hundred pounds in full satisfaction and discharge of the profits royalty for the year ending the thirty first day of December One thousand nine hundred and twenty four.

Account books.

2. The French Company shall keep accurate accounts in separate books containing all entries and particulars of its sales in the aforesaid countries for the purpose of showing the amount payable to the English Company by way of royalty as aforesaid. The said books shall be kept at the French Company's office in Paris and shall if required be produced for inspection by an officer of the English Company's Board of Directors. The English Company shall be at liberty to make copies or extracts from any of the accounts or records.

Accounts of sales.

3. The French Company shall within twenty days of the thirty first day of March, the thirtieth day of June, the thirtieth day of September, and the thirty first day of December furnish to the English Company a full account of all sales made during the preceding quarter such statement shall be verified by Notarial Declaration if so required by the English Company at their expense.

Quality of Glassware.

4. The French Company shall cause every article made, manufactured or sold by them in the countries aforesaid under this License to be equal in quality and finish to the glassware now sold by the English Company and shall cause every article so made, manufactured or sold to be clearly and indelibly marked with the name of "Holophane" and will not sell any articles unless so marked.

English Company's right to inspect factories.

5. The English Company may by its officers authorised by resolution of its Board inspect the works or factories where the articles sold by the French Company are made or shops or warehouses or premises where the articles sold by the French Company are stored.

Use of Trade name of Holophane.

6. The French Company will not use the inventions or designs the trade name of Holophane except in accordance with this agreement.

Mutual communication of discoveries.

7. The English Company and the French Company shall communicate to each other any discoveries or improvements relating to the Holophane system of illuminating glassware so that they respectively have the benefit of such discovery or improvement and any such discoveries or improvements shall be deemed to be included in this agreement and on the termination hereof the English Company shall have the full right of using and manufacturing in accordance therewith.

Infringements.

8. In case the inventions or designs belonging to the English Company specified in the First Schedule hereto or used by the French Company in pursuance of the provisions [fol. 221] of this agreement shall be infringed within the aforesaid countries the French Company shall forthwith after notice of such infringement at its own cost take all necessary proceedings for effectually protecting and defending the same unless the English Company shall notify the French Company in writing of their intention to prosecute the infringers themselves.

License not to be assigned without consent.

9. The French Company shall not assign or transfer this License or any part thereof to any person or persons without the consent in writing (under seal) of the English Company.

Validity of patents not to be disputed.

10. The French Company shall not dispute the validity of any o fthe patents, designs or marks specified in the said first Schedule orhereafter to be obtained, registered or recorded by the Company in the aforesaid countries.

Prismatic glassware not to be exported to United Kingdom.

11. The French Company shall take all adequate steps to prevent the export of any of the articles of prismatic glassware made or manufactured for sale within the limits of the aforesaid countries to the United Kingdom or to any country not being one of the aforesaid countries included in this License except such articles as shall be manufactured for or under the direction of the English Company.

English Company not to export to France.

12. The English Company shall take all steps possible to prevent the importation from the United Kingdom or other countries into France or into the licensed countries of Holophane goods.

License to become void on non-payment of Royalties or breach of conditions.

13. If the royalties or sums hereby made payable or any part thereof shall at any time be in arrear or unpaid for 21 days after the same shall have become due whether legally demanded or not or if the French Company shall make default in performing or observing any of the covenants, agreements or conditions on their part to be performed and observed or shall go into liquidation or cease to carry on business or if the French Company or its shareholders shall refuse or neglect for twenty one days to appoint the person nominated in writing by the English Company as its representative on the Board of Management or if they shall remove from office a Director nominated by the English Company except at the request or with the consent in writing of the English Company or if the French Company shall at any time after the request in writing of the English Company refuse or neglect for twenty one days to remove its representative for the time being on the Board of the French Company and to appoint another Director nominated by the English Company in his place then and in any such case the English Company may by notice in writing given to the French Company revoke this License which shall thereupon become void without prejudice to right of action or remedy of the English Company for the recovery of any monies then due to them hereunder or in respect of any antecedent breach of any of the covenants or agreements of the French Company hereinbefore contained.

French Company to pay all duties &c

14. The French Company will pay all duties, taxes, fines, fees and other payments which now are or may hereafter during the continuance of this License become payable in respect of the said patents, designs or trade marks or any renewal or extention thereof one month prior to the day on which the same shall respectively become payable and shall forthwith send the receipts for such payments to the registered office of the English Company for production the English Company to forthwith return such receipts and do all such other acts and things as may be necessary to maintain and keep on foot the siad patents, designs and trade marks.

[fol. 222] English Company to be entitled to manufacture in licensed countries.

15. Nothing herein contained shall affect the right of the English Company or any person or persons, corporations or Companies appointed by the English Company to use and exercise the said inventions for the purpose of manufacturing glassware within the aforesaid countries of Belgium Italy, Spain, Portugal and Switzerland for sale by the English Company outside the said countries.

Renewal.

16. If this License shall not have been determined under any of the provisions hereinbefore contained and if the French Company shall have duly and punctually observed and performed all the covenants, agreements and conditions on its part herein contained and shall have exploited the license hereby given to the satisfaction of the English Company and if the French Company shall desire a renewal of the License hereby given for the further term of five years and of such desire shall give six calendar months previous notice the English Company shall grant such renewed license upon similar terms to those contained in this license except that the minimum sales royalty payable in each year shall be Eight hundred pounds and that the amount To be paid for profits royalty for the last year of the terms shall be the fixed sum of Four hundred pounds sterling and such renewed license be deemed to have been properly exploited within the meaning of this Clause if the French Company shall prove to the English Company either that it has expended a sum of at least Two hundred thousand francs in establishing stocks and developing the production and sale of Holophane products in the countries of Italy, Portugal, Spain and Switzerland and that the average sale prices in such countries shall have amounted to Three thousand pounds sterling per annum during the continuance of this License.

License to be construed according to English Law.

17. This license is to be construed and take effect as a Contract made in England and the French Company hereby submits to the jurisdiction of the High Court of Justice in

England and hereby appoints its Solicitors Messrs. Herbert, Smith, Goss, King and Gregory of No. 62 London Wall in the City of London and their successors in business and every clerk for the time being of that firm to be the agent in London of the French Company for the purpose of accepting service on its behalf of any writ, notice, order, judgment or other legal process or documents in respect of any matter arising out of this license and such appointment shall not be revocable and service of any document on such appointee shall be deemed to be good service on the French Company for all purposes and the French Company elects domicile at the office of the said Messrs Herbert, Smith, Goss, King & Gregory or their successors in business.

In witness whereof the parties hereto have hereunto caused their Common Seals to be affixed the day and year first above written.

The Common Seal of Holophane
Limited was affixed in the presence of :—
For and on behalf of Holophane Limited.,

Directors.
Secretary.

[fol. 223] "B"

This agreement made the 28th day of January One thousand nine hundred and twenty seven between Holophane Limited (incorporated in 1926) whose registered offices are situate at Elverton Street, Vincent Square in the City of Westminster (hereinafter called the "New English Company") of the one part and The Societe Anonyme Francaise Holophane whose registered office is situate at 156 Boulevard Haussmann, Paris in the Republic of France (hereinafter called "the French Company") of the other part.

Supplemental to an Agreement dated the Twenty fourth day of May One thousand nine hundred and twenty one and made between Holophane Limited (in Liquidation) (hereinafter referred to as "the old English Company") of the one part and the French Company of the other part whereby the old English Company agreed to grant to the French Company a license for making, using and vending in accordance with the old English Company's patents in

the Countries of Belgium, Italy, Spain, Portugal and Switzerland prismatic glassware for illuminating purposes and also the Trade name of Holophane for the period of five years from the 1st January 1920 with an option for renewal for a further term of five years upon the terms and conditions therein mentioned.

Whereas the French Company duly exercised its said option and the said license was extended for a further term of five years from the 1st January One thousand nine hundred and twenty five subject to the payment of a minimum Sales Royalty of Eight Hundred Pounds per annum during the said extended term.

And whereas by Special resolution of the old English Company passed and confirmed at Extraordinary General Meetings thereof held respectively the Eleventh day of December One thousand nine hundred and twenty five and the twenty eighth day of December One thousand nine hundred and twenty five it was resolved that it was desirable to wind up the Old English Company with a view to re-construction and that the Old English Company should be wound up voluntarily and that John Wyatt Ife should be and he was thereby appointed Liquidator for the purposes of such winding up.

And whereas the New English Company was registered under the Companies Acts 1908 to 1917.

And whereas by an Agreement dated the First day of January One thousand nine hundred and twenty six and made between the Old English Company and the said John Wyatt Ife of the one part and the New English Company of the other part for the consideration therein mentioned it was agreed inter alia that the full benefit of all pending contracts, licenses and agreements made by the Old English Company should be transferred to the New English Company.

And whereas the French Company has applied to the New English Company for a further extension of the said license for a period of Ten years from the First day of January One thousand nine hundred and Thirty and the New English Company has agreed to grant such extentions upon the terms and conditions hereinafter mentioned.

And whereas certain of the Patents and Trade Marks referred to in the First Schedule to the Principal Agree-

ment have lapsed and the Patent and Trade Marks now subject to the said license are set out in the Schedule hereto. [fol. 224] Now this agreement witnesseth that it is hereby mutually covenanted and agreed between the respective parties hereto as follows:—

1. The French Company covenants with the New English Company that the French Company will during the remainder of the extended term of five years expiring on the First day of January One thousand nine hundred and thirty pay the Royalties and perform all the covenants and agreements on the part of the French Company reserved and contained in the Principal Agreement. The minimum Sales Royalty for the said period shall be the sum of Eight Hundred Pounds per annum.

2. The New English Company in consideration of the Royalties and payments hereinafter reserved and made payable by the French Company to the New English Company and the covenants and agreements on the part of the French Company hereinafter contained shall provided the Royalties reserved by and the covenants and agreements contained in the Principal Agreement shall have been duly paid and performed grant unto the French Company and its permitted assigns the full license during the term of Ten years from the First day of January One thousand nine hundred and thirty to use and exercise the inventions referred to in the principal Agreement and the Trade Name of Holophane for the purposes of manufacture of articles and wares in accordance with the inventions within the countries of Belgium, Italy, Spain, Portugal and Switzerland and also a sole full and exclusive license to sell within the countries of Belgium, Italy, Spain, Portugal and Switzerland all glass wares manufactured within the said limits and according to the said inventions during the said extended term.

3. All the covenants and conditions contained in the Principal Agreement except those contained in Clauses 1 and 16 shall apply to be enforceable during the said extended term of Ten years and shall be observed and performed by the Old English Company and the New English Company respectively.

4. The French Company shall pay to the New English

Company during the said extended term of ten years a royalty (hereinafter referred to as the "sales Royalty") at the rate of three per cent on the sale prices received by the French Company from the sales of all glassware made in accordance with the patents specified in the Schedule hereto or which may hereafter be acquired by the new English Company and of all prismatic glassware (whether or not the subject of one of the patents hereby licensed) within the countries aforesaid. The said royalty shall be paid quarterly on the first day of April, the First day of July, the First day of October and the Thirty first day of December the first payment to be made on the First day of April, One thousand nine hundred and thirty. Provided always that in any year during the said extended term in which the sales royalty shall fall below the sum of One thousand Pounds the French Company shall pay to the New English Company the sum of One thousand Pounds for the year in which such deficiency shall occur. For the purposes of this clause the words "Sales prices" shall mean the price received or receivable from customers after deducting all usual trade discounts (other than discounts for cash) and returns. The French Company shall in every year during the continuance of the said extended term in which the French Company [fol. 225] shall declare or pay a dividend or dividends to its shareholders pay to the New English Company by way of additional Royalty a sum equal to the dividend or dividends so declared or paid on Five Hundred shares of Five hundred Francs each in the Capital of the French Company and such additional Royalty shall be payable on the quarterly day hereinbefore named immediately following the declaration or payment of such dividend.

In witness whereof the parties hereto have caused their Common Seals to be affixed the day and year first above written.

[fol. 226] "C"

An agreement made the Twenty fifth day of February One thousand nine hundred and twenty nine between Holophane Limited (incorporated in One thousand nine hundred and twenty six) whose registered offices are situate at Elverton Street, Vincent Square in the City of Westminster (hereinafter called the "new English Company") of the

one part and The Societe Anonyme Francaise Holophane whose registered office is situate at 156 Boulevard Haussmann, Paris in the Republic of France (hereinafter called "the French Company") of the other part.

Supplemental to an agreement dated the twenty fourth day of May One thousand nine hundred and twenty one and made between Holophane Limited (therein called the "Old English Company") of the one part and the French Company of the other part whereby the old English Company agreed to grant to the French Company a License in connection with prismatic glassware for illuminating purposes and to an agreement dated the Twenty Eighth day of January One thousand nine hundred and twenty seven made between the new English Company of the one part and the French Company of the other part in reference to the said Licence.

Whereas the French Company is desirous of extending and facilitating the sale of prismatic glass ware in Italy and its Colonies and the French Company has requested the new English Company to consent to an Italian Company called "Societa Anonima Italiana Isolatori Folembray" with Head Office at Fidenza in Italy (hereinafter called "the Italian Company") making, using and vending in accordance with the new English Company's existing patents or such patents as the new English Company may during the continuance of the above mentioned agreements hereafter acquire the inventions, articles and wares as the same are made or used by the new English Company in the United Kingdom within the country of Italy and its Colonies which the new English Company has agreed to do on the following terms and conditions.

Now it is witnessed that in pursuance of the agreement and in consideration of the premises the new English Company doth hereby grant unto the French Company permission to grant to the Italian Company during the continuance of the said agreements of the Twenty fourth day of May One thousand nine hundred and twenty one and the Twenty eighth day of January One thousand nine hundred and twenty seven a sub-licence with all necessary and usual conditions and stipulations to use and exercise the said inventions and designs and the trade name of "Holophane" for the purpose of the manufacture by the Italian

Company of the said articles and wares in accordance with the said inventions and designs within the country of Italy and its present Colonies and permission also to sell within the country of Italy and its present Colonies all glassware so manufactured and all Holophane prismatic glass ware sold by the French Company to the Italian Company on condition that

(a) The Italian Company shall not make or sell any Prismatic glass other than in accordance with the above mentioned inventions or Holophane designs.

(a-a.) All prismatic glass ware manufactured by the Italian Company shall be indelibly marked "made in Italy" or words to that effect and if possible also marked with the number of the Patent it is made in accordance with.

[fol. 226A] (b) The Italian Company shall not assign or transfer the Licence to be granted to it by the French Company or any part of such Licence to any person or persons or Corporation without the consent in writing under Seal of the New English Company.

(c) The French Company will immediately advise the new English Company of all shipments of prismatic glass ware by the Italian Company to Italian Colonies.

(d) The Italian Company shall impose a condition on persons or Corporations to whom it sells prismatic glass ware not to export the same except for use in Italian Colonies.

(e) The French Company shall impose a condition upon the Italian Company that at the expiration or termination of the Licence to be granted to it by the French Company the Italian Company shall hand over all moulds for the manufacture of Holophane prismatic glass in its possession or power to the French Company at a valuation to be based upon cost less depreciation.

(f) The French Company shall impose a condition upon the Italian Company that every article made or manufactured by the Italian Company under the above Licence shall be equal in quality and finish to the glass ware now sold by the new English Company and that every article so-made and manufactured be clearly

and indelibly marked with the name of "Holophane Italia" and that it will not sell any such articles unless so marked.

(g) The French Company shall impose upon the Italian Company a condition that on any breach by the Italian Company of any of the above conditions it shall have the right to determine the Licence by the French Company to the Italian Company

Now it is hereby further agreed that:

1. That on any breach by the Italian Company of the above mentioned conditions the French Company will at its own expense take all necessary proceedings and prosecute the same with all due diligence to prevent such breaches in the future and to compel the Italian Company to carry out its obligations to the French Company.

2. The French Company will pay to the new English Company by way of damages five times the invoice value of any glass exported by the Italian Company in breach of its Licence.

3. The French Company will pay to the new English Company the sum of One thousand pounds by way of agreed damages if the Italian Company shall within two years of tthe termination of the Licence to be granted to it by the French Company use the name of Holophane or manufacture and/or sell prismatic glass ware designs similar to Holophane prismatic glass ware designs.

4. The minimum royalty of Eight hundred pounds payable by the French Company to the new English Company under clause 1 of the said agreement of the Twenty eighth day of January One thousand nine hundred and twenty seven shall from the First day of January One thousand nine hundred and twenty nine be the sum of One thousand pounds.

5. For the purpose of arriving at the royalty payable [fol. 227] under the said agreements of the Twenty fourth day of May One thousand nine hundred and twenty one and Twenty eighth day of January One thousand nine hundred and twenty seven all prismatic glass ware made and sold by the Italian Company under the Licence to be granted to it by the French Company shall be treated as if it were made and sold by the French Company. The new English Com-

pany will not whilst the licence to be granted to the Italian Company is in force manufacture prismatic glass ware in Italy.

6. All the Covenants and conditions contained in the said agreement of the Twenty fourth day of May One thousand nine hundred and twenty one (except as modified or varied by the said agreement of the Twenty eighth day of January One thousand nine hundred and twenty seven) and all the covenants and conditions contained in the said agreement of the Twenty eighth day of January One thousand nine hundred and twenty seven except in so far as they are modified or varied by this agreement shall remain in full force and effect.

In witness whereof the parties hereto have caused their Common Seals to be affixed the day and year first above written.

(The Common Seal of the
(Societe Anonyme Francaise
(Holophane was affixed
(hereto in the presence of:

[fol. 228] "D"

An agreement made the seventh day of December One thousand nine hundred and thirty-six between HOLOPHANE LIMITED whose registered office is situate at Elverton Street, Vincent Square in the City of Westminster (hereinafter called "the English Company") of the one part and THE SOCIETE ANONYME FRANCAISE HOLOPHANE whose registered office is situate at 156 Boulevard Haussemann, Paris in the Republic of France (hereinafter called "the French Company") of the other part

Supplemental to

(1) An Agreement dated the twenty-fourth May One thousand nine hundred and twenty-one and made between Holophane Limited (therein referred to as "the Old English Company") of the one part and the French Company of the other part whereby the Old English Company granted to the French Company a Licence for making, using and vending in accordance with the Old English Company's patents in the countries of Belgium, Italy, Spain, Portugal and Switzerland prismatic glassware for illuminating pur-

poses and also the right to use the trade name Holophane in the said countries for the term of five years with an option for renewal for a further term of five years from the First January One thousand nine hundred and twenty-five upon the terms and conditions therein mentioned.

(2) An Agreement dated the twenty-eighth January One thousand nine hundred and twenty-seven and made between the English Company of the one part and the French Company of the other part whereby after reciting that the French Company had exercised its option and that the term of the said License had been extended for the further term of five years from the First January One thousand nine hundred and twenty-five subject to the payment of a minimum sales Royalty of eight hundred pounds per annum during the extended term and that the benefit of the said agreement dated Twenty-fourth May One thousand nine hundred and twenty-one had been transferred to the English Company (therein called "the New English Company") it was agreed that the said License should be extended for the further term of ten years from the First January One thousand nine hundred and thirty and that the French Company should pay to the English Company during the said extended term a royalty at the rate of Three per cent on the sale prices received by the French Company with a minimum of One thousand pounds in each year.

(3) An Agreement dated the twenty-fifth February One thousand nine hundred and twenty-nine and made between the English Company of the one part and the French Company of the other part whereby the French Company was granted permission to grant a Licence to the Societa Anonima Italiana Isolatori Folembray upon the terms and conditions therein mentioned it was provided that the minimum royalty of Eight hundred pounds payable under the said Agreement dated the Twenty-eighth January One thousand nine hundred and twenty-seven until the First January One thousand nine hundred and thirty should be increased to One thousand pounds (which agreements are hereinafter referred to as "the principal Agreements")

Whereas the French Company has requested the English Company to agree to a reduction in the amount of the mini-

mum royalty of One thousand pounds for the period of one year commencing on the First October One thousand nine hundred and thirty six and ending on the Thirtieth September One thousand nine hundred and thirty-seven and the English Company has agreed to such request subject to the sales royalty being increased from Three per cent to Six per cent on sale prices during the said period.
[fol. 229] Now this agreement witnesseth that in consideration of the said agreement it is hereby mutually covenated and agreed as follows.

1. As from the First day of October One thousand nine hundred and thirty six until the Thirtieth Day of September One thousand nine hundred and thirty-seven (both dates inclusive) the French Company shall pay to the English Company a Royalty (hereinafter referred to as "the Sales Royalty") at the rate of Six per cent on sale prices in lieu of the commission of Three per cent provided in the Principal Agreements and the Minimum Royalty payable by the French Company shall be reduced to the sum of Five Hundred Pounds per annum instead of One thousand pounds per annum. For the purpose of ascertaining the amount due from the French Company to the English Company during the said period the principal agreements shall be read and construed as though there had been inserted in the Principal Agreements in place of the words "Three per cent" the words "six per cent" and in place of the words "One thousand pounds" (minimum Royalty) the words "Five hundred pounds."

2. The words "Sales Royalty" and "sale prices" in this Agreement shall have the meanings defined in the principal Agreements.

3. Nothing in this Agreement shall be deemed to deprive the English Company of their right to the profits Royalty as defined in the principal Agreements.

4. For the purpose of ascertaining the amount payable to the English Company for Royalties for the period of nine months from the First January to the Thirtieth September One thousand nine hundred and thirty-six inclusive, the Minimum Royalty for the said nine months shall be the sum of Seven hundred and fifty pounds.

5. From and after the Thirtieth September One thousand

nine hundred and thirty seven the Royalties shall be at the rate of Three per cent with a minimum of One thousand pounds per annum as provided by the principal Agreements. The minimum for the period of three months from and including the First October One thousand nine hundred and thirty-seven shall be the proportionate sum of Two hundred and fifty pounds.

In witness whereof the parties hereto have hereunto caused their Common Seals to be affixed the day and year first above written.

[fol. 230] "E"

An agreement made the 1st day of March 1940 between Holophane Limited whose registered office is situate at Elverton Street, Vincent Square in the City of Westminster (hereinafter called "the English Company") of the one part and The Societe Anonyme Holophane formerly The Societe Anonyme Francaise Holophane whose registered office is situate at 156 Boulevard Haussmann, Paris in the Republic of France (hereinafter called "the French Company") of the other part. Supplemental to

(1) An agreement dated the 24th May 1921 and made between Holophane Limited (therein referred to as "the old English Company") of the one part and the French Company of the other part whereby the Old English Company granted to the French Company a licence for making, using and vending in accordance with the Old English Company's patents in the countries of Belgium, Italy, Spain, Portugal and Switzerland prismatic glassware for illuminating purposes and also the right to use the trade name of Holophane in the said countries for the term of 5 years with an option for renewal for a further term of 5 years from the 1st January 1925 upon the terms and conditions therein mentioned.

(2) An agreement dated the 28th January 1927 and made between the English Company of the one part and the French Company of the other part whereby after reciting that the French Company had exercised its option and that the terms of the said Licence had been extended for the further term of 5 years from the 1st January 1925 subject

to the payment of a minimum sales Royalty of £800 per annum during the extended term and that the benefit of the said agreement dated the 24th May 1921 had been transferred to the English Company (therein called "the New English Company") it was agreed that the said Licence should be extended for the further term of 10 years from the 1st January 1930 and that the French Company should pay to the English Company during the said extended term a royalty at the rate of 3% on the sale prices received by the French Company with a minimum of £1,000 in each year.

(3) An agreement dated the 25th February 1929 and made between the English Company of the one part and the French Company of the other part whereby the French Company was granted permission to grant a Licence to the Societa Anonima Italiana Isolatori Folembray (hereinafter called "the Italian Company") upon the terms and conditions therein mentioned it was provided that the minimum royalty of £800 payable under the said Agreement dated the 28th February 1927 until the 1st January 1930 should be increased to £1,000.

(4) An Agreement dated the 7th December 1936 made between the English Company of the one part and the French Company of the other part whereby it was agreed that as from the 1st October 1936 until the 30th September 1937 the Royalty payable by the French Company to the English Company should be at the rate of 6% on sale prices in lieu of the Commission of 3% provided in the above mentioned agreements and that the minimum Royalty payable by the French Company should be reduced from the sum of £1,000 to £500 per annum and that from and after the 30th September 1937 the Royalty should be at the rate of [fol. 231] 3% with a minimum of £1,000 per annum as provided by the above mentioned agreements which agreements are hereinafter referred to as "the Principal Agreements."

Whereas it has been agreed between the parties hereto that the minimum Royalty payable by the French Company for the years ending the 30th September 1938 and the 30th September 1939 shall be reduced to the sum of £500 per annum and such reduced minimum Royalty has been paid to the English Company for the year ending 30th September 1938.

And whereas the parties hereto desire to extend the term of the said Licence for the period hereinafter mentioned subject to the modification of the Principal Agreements in manner hereinafter appearing,

Now this agreement witnesseth that in consideration of the said agreement it is mutually covenanted and agreed as follows:—

(1) The minimum Royalty payable under the Principal Agreements shall be deemed to have been reduced to £500 per annum as from the 30th September 1937.

(2) The Licence granted by the Principal Agreements shall be extended as from the 1st January 1940 for the period of the present War between Great Britain, Franch and Germany and for twelve months after the signing of the Treaty of Peace between the said countries.

(3) The minimum Royalty due under the Principal Agreements for the period from the 1st January to the 31st August 1939 shall be the sum of £334. The remainder of the minimum Royalty for the year 1939 namely £166 for the period from the 1st September to the 31st December shall not be payable until the date of the said Treaty of Peace and if the Royalties paid for the last 4 months of the year 1939 exceed £166 such minimum Royalty will cease to be payable in respect of that period. If the Royalties paid for the said 4 months are less than £166 the difference between the amount of the said Royalties and £166 shall be payable at the date of the said Treaty of Peace.

(4) No minimum annual Royalties shall be payable during the continuance of this agreement.

(5) The Royalties payable as from the 1st January 1940 on sales shall be at the rate of 3% in lieu of the rate of 6% as provided by the Principal Agreements except that the Royalties on prismatic Glassware for illuminating purposes not covered by Holophane patents sold by the Italian Company shall be payable at the rate of 1% only.

(6) The French Company shall be at liberty to grant to the Italian Company during the period of the extended Licence hereby granted an extension of the Licence to that Company authorised by the Licence dated the 25th February 1929 subject to the conditions set out in the last mentioned Licence.

(7) All covenants and conditions contained in the Principal Agreements except so far as the same are modified or varied by this agreement shall apply to and be deemed to be incorporated in this present agreement.
[fol. 232] (8) Within the period of 6 months after the signing of Peace in the present War the parties hereto will commence discussions with a view to .riving at a basis for a new Licence to take effect upon the determination of the present Licence.

In witness whereof the Companies parties hereto have hereunto affixed their Common Seals the day and year first above written.

The Common Seal of Holophane Limited was hereto affixed in the presence of } Directors / Secretary

The Common Seal of The Societe Anonyme Francaise Holophane was hereto affixed in the presence of } Directors / Secretary

[fol. 233] "F"

Resumé of English-French Agreement Patents, Designs and trade marks in Belgium, Spain, Portugal, Switzerland, schedule attached.

Holophane Ltd. and Societe Anonyma Francaise Holophane (May 24, 1921)

License existing patents, or such patents as the English company may during the continuance of this agreement hereafter acquire by itself or its agents the inventions, articles and wares as the same are made or used by the English company in the United Kingdom within the territories. One person on Board of English company.

1. Five years from January 1, 1920.

Royalty quarterly at rate of 3% per annum (after trade discounts) on sale of all prismatic ware (whether subject of patent or not) there being a minimum.

Plus dividend on 500 shares (par 500 francs) of the French company when paid.

Plus £400 sales royalty accrued to December 31, 1920. If

this agreement is not renewed the Royalty of 1924 shall also be £400.

2. Accounting in France open to British company.

3. Accounting on 30th day of 3 - 6 - 9 - 12.

4. All articles under license to be marked under name Holophane and shall not sell such articles unless so marked.

5. Inspection of French factory, etc. by English company permitted.

6. No use of inventions or trade marks except under agreement.

7. Mutual exchange of discoveries.

8. Infringement in territory—obligation of French company unless British company chooses to prosecute.

9. No assignment of agreement with consent of British company.

10. French company shall not dispute validity.

11. French company shall take all steps to prevent export of prismatic glass to United Kingdom or to any country not licensed.

12. British company similar undertaking.

13. Arrears 21 days on Royalties or liquidate or on failure to appoint a Board member. The English company may revoke license but monies due still payable.

14. All taxes, annuities on patents, etc. payable by French company.

15. The English company may manufacture in the licensed companies for sale outside of the licensed territories.

16. On proper performance the French company may renew license for a further period of five years (1929) but minimum shall be £500 per annum and profits £400 per annum—Proper exportation is at least the expenditure of 200,000 francs in stock and developing sales and production and sale shall amount to at least £3000 per annum.

17. Contract interpreted a/c to British Law.

[fol. 234] 1929 February 25, 1929. Some parties. Supplemental to both previous agreements. A company called Societe a Anonima Italiana Isolatori Folembray. This new company to be granted a sub-license.

(a) The Italian company shall not make or sell any prismatic glass except in accordance with such designs. All marked "made in Italy".

(b) No assignment sub-license without consent of English company.

(c) French company will advise of prismatic shipments of Italian glass to Italian colonies.

(d) Italian company shall not permit export.

(e) All molds at end of contract to be sold to French company at valuation.

(f) All prismatic ware marked Holophane Italia.

(g) On breach contract to be terminated.

(1) French company to be responsible for breaches.

(2) Damages five times invoice value of any Italian prismatic glass exported.

(3) £1000 as liquidated damages if Italian company at end of contract and within two years uses name Holophane or sells prismatic glass like contract.

(4) Royalty of £800 shall be £1000.

(5) Italian glass shall be from royalty point of view be treated as French glass.

(6) All other provisions shall remain.

1927. January 28, 1937 Supplements agreement of May 24, 1921. License was extended from January 1, 1924 for a further term of five years on £800 Royalty, old British company was liquidated, a new English company was registered, all old contracts assumed.

French company wishes to renew for a period of ten years from January 1, 1930 and extensions are mutually agreeable.

New schedule annexed.

(1) For balance of present term (to January 1, 1930) pay at rate of £800 per annum.

(2) Extended to January 1, 1940 same territory.

(3) All terms repeated except clauses 1 and 16. Extended to ten year terms.

(4) A sales royalty to be paid 3% on sales prices received by the French company from the sales of all glassware made in accordance with the patents specified in the schedule hereto or which may hereafter be acquired by the new English company and of all prismatic glassware (whether or not the subject of one of the patents hereby licensed within the countries aforesaid. Royalty—April, July, October, December 1st on April 1, 1930. If royalty shall fall below

£1000 the French company shall pay to new English company the deficiency. Royalty based on dividends of 500 shs (500 francs) each continued.

[fol. 235] 1936 Recites all former agreements. French company asks a reduction of royalty of £1000 to £500—for one year—for year commencing on October 1, 1936—to which English company has agreed—if royalty is increased from 3%, to 6%.

(1) Royalty increased from 3% to 6% minimum royalty from £1000 to £500

(2) and (3) Profits royalty remains.

(4) Royalties 1/1 to 9/30/1936—£750.

(5) From and after 9/30/37 3% minimum £1000 per annum as provided in original agreements. Minimum for three months from and including October 1, 1937 shall be the proportionate sum of £250.

1940. March 1, 1940 Recites all agreements. Wherein it has been agreed that year ending September 30, 1930 and September 30, 1939 royalty reduced to £500 having been paid for 1938.

Agreement to be extended

(1) Minimum royalty reduced to £500 per annum from September 30, 1937.

(2) License for war and twelve months thereafter.

(3) iMnimum royalty from 1/1 to 8/31/39 shall be £334. Remainder of minimum for 1939 namely £166. Shall not be payable until the date of the Treaty of Peace and if no royalties for last four months 1939 exceed £166 such minimum shall not be payable but if less balance payable on T. of P.

(4) No minimum during agreement.

(5) Royalties from 1/1/40 3% instead of 6% and Italian on prismatic glass not covered by patents 1%.

(6) Italian license continued by French company.

(7) All other covenants incorporated.

(8) A new license contemplated six months after T. of P.

Government's Exhibit 8

Telegrams: HOLOPHANE, SOWEST, LONDON.
Telephone: VICTORIA 2491 & 8258.

Works: GATESHEAD.

Holophane Limited
(Scientific Illumination)
Elverton Street,
Vincent Square,
London, S.W.1.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE FIRM.

Our ref	H.T/LM.
Your ref	

28th October, 1927.

Messrs. Holophane Company, Inc.,
342, Madison Avenue,
NEW YORK, U. S. A.,

Dear Sirs,

Referring to your letter of the 7th October, elaborating the Trading Agreement between us, I have submitted this for approval to the board of Directors at their meeting this afternoon, and have the pleasure to advise you that it has been accepted so that presumably matters will now be in a normal state between us and we shall be free to communicate backwards and forwards in regard to our various requirements.

Yours faithfully,

HOLOPHANE, LIMITED.
BY:- Hepworth Thompson

170 "A"

"A"

OTIS A. MYGATT
PRESIDENT

J. CHAS. FRANCK

JOEL B. LIEBERMAN

Holophane Company, Inc.
(Illumination Service)

Works, Newark, Ohio

MAIN OFFICE
342 MADISON AVE
NEW YORK

ADDRESS REPLY TO
NEWARK, OHIO

October 7, 1927

Mr. H.Hepworth Thompson,Esq.,
Managing Director
Holophane Ltd.
Vincent Square
Westminster,
London England,S.W.1.

Dear Mr. Thompson:

Confirming our understanding of today it is agreed that the so-called trading agreement of September 15th,1925 between your company and ourselves shall be modified to the extent that for the period of two years after November 1,1927 your company will place with us orders for the manufacture of at least 80% of all of your refractor requirements for South America at the rate outlined in the trading agreement, and further on all manufacture for your South American refractor requirements not placed with us you will pay us a sum equivalent to ten (10) per cent of your net selling price to your customers of all such goods not manufactured by us. Calendar quarterly itemised statements of your

CHAS FRANCK
OTIS A. MYGATT
JOEL B. LIBERMAN

Holophane Company, Inc.
(Illumination Service)

Works Newark, Ohio

MAIN OFFICE
342 MADISON AVE
NEW YORK

ADDRESS REPLY TO
NEWARK, OHIO

Mr.H.Hepworth Thompson - October 7, 1927

South American Refractor sales are to be rendered to us within thirty days of the end of the quarter. Payment for the goods manufactured by us for your account is to be made as heretofore and on your sales for which we are entitled to a percentage, payment is to be made in United States funds with the rendition of the statement.

For the above period of two years it is also understood and agreed that there is to be a free interchange of commercial and engineering information so as to put each of us in possession of all information concerning commercial and engineering development advertising, and also including the right to visit and study the various plants of each party concerned so that each can have the benefit of the ideas tending to commercial and engineering progress which the other is advancing, including the furnishing of all samples requested by you on the above sale conditions. All orders placed for glassware other than refractors shall be applied to the quota.

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CHAS. FRANCK
OTIS A. MYGATT
JOEL H. LIEBERMAN

Holophane Company, Inc.
(Illumination Service)
Works, Newark, Ohio

HOLOPHANE

ADDRESS REPLY TO
NEWARK, OHIO

Mr. H. Hepworth Thompson - October 7, 1927

Except as modified herein the original agreement shall remain in full force and effect and at the expiration of the present modification of the agreement for any cause whatsoever the original agreement shall continue unmodified in full force and effect as though this letter agreement had never been written and accepted.

Very truly yours,
HOLOPHANE COMPANY INC.

CHAS. FRANCK
OF MC

By Chas. Franck
Vice President

The above is accepted subject to confirmation by my board of directors.

H. H. Thompson
President Illuminating Engineering Society

Government's Exhibit 9

HOLOPHANE COMPANY, INC.

The regular monthly meeting of the Board of Directors of Holophane Company, Inc., was held at the office of the company, 342 Madison Avenue, New York, N. Y. on Thursday morning, November 7th, 1929 at 9:45 A. M.

Present: Charles Franck,
Joel B. Liberman
Helmuth M. Kiesewetter
John G. Jackson
Stuart F. Reed
Alma L. Rustin, Secretary.

Mr. Franck called the meeting to order and acted as Chairman and Miss Rustin as secretary.

The minutes of the previous meeting held October 3rd, 1929 were read and approved.

Mr. Franck stated that a new arrangement has been entered into with Holophane Limited of London whereby the existing arrangement is continued, except that the commission basis is altered as follows: The company is guaranteed a commission of $2500.00 per year representing 7 1/2% on the amount of refractor business done in South America and when this minimum is reached the company receives 5% on all business thereafter.

Mr. Franck also stated that conversations had been had between Messrs. Thompson, Franck and Liberman on the subject of the company acquiring an interest in the German Holophane business and Mr. Thompson agreed to take up the matter with his directors.

An informal report on progress of the company was presented and the directors expressed themselves as gratified with the company's progress.

Messrs. Franck and Liberman were authorized to purchase securities in their discretion (having in mind the uncertain state of the market) up to $50,000 for the company's account.

There being no further business to come before the meeting it was adjourned after the usual motion.

Respectfully,

Alma L. Rustin

Secretary.

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mum royalty of One thousand pounds for the period of one year commencing on the First October One thousand nine hundred and thirty six and ending on the Thirtieth September One thousand nine hundred and thirty-seven and the English Company has agreed to such request subject to the sales royalty being increased from Three per cent to Six per cent on sale prices during the said period.

[fol. 229] Now this agreement witnesseth that in consideration of the said agreement it is hereby mutually covenated and agreed as follows.

1. As from the First day of October One thousand nine hundred and thirty six until the Thirtieth Day of September One thousand nine hundred and thirty-seven (both dates inclusive) the French Company shall pay to the English Company a Royalty (hereinafter referred to as "the Sales Royalty") at the rate of Six per cent on sale prices in lieu of the commission of Three per cent provided in the Principal Agreements and the Minimum Royalty payable by the French Company shall be reduced to the sum of Five Hundred Pounds per annum instead of One thousand pounds per annum. For the purpose of ascertaining the amount due from the French Company to the English Company during the said period the principal agreements shall be read and construed as though there had been inserted in the Principal Agreements in place of the words "Three per cent" the words "six per cent" and in place of the words "One thousand pounds" (minimum Royalty) the words "Five hundred pounds."

2. The words "Sales Royalty" and "sale prices" in this Agreement shall have the meanings defined in the principal Agreements.

3. Nothing in this Agreement shall be deemed to deprive the English Company of their right to the profits Royalty as defined in the principal Agreements.

4. For the purpose of ascertaining the amount payable to the English Company for Royalties for the period of nine months from the First January to the Thirtieth September One thousand nine hundred and thirty-six inclusive, the Minimum Royalty for the said nine months shall be the sum of Seven hundred and fifty pounds.

5. From and after the Thirtieth September One thousand

nine hundred and thirty seven the Royalties shall be at the rate of Three per cent with a minimum of One thousand pounds per annum as provided by the principal Agreements. The minimum for the period of three months from and including the First October One thousand nine hundred and thirty-seven shall be the proportionate sum of Two hundred and fifty pounds.

In witness whereof the parties hereto have hereunto caused their Common Seals to be affixed the day and year first above written.

[fol. 230] "E"

An agreement made the 1st day of March 1940 between Holophane Limited whose registered office is situate at Elverton Street, Vincent Square in the City of Westminster (hereinafter called "the English Company") of the one part and The Societe Anonyme Holophane formerly The Societe Anonyme Francaise Holophane whose registered office is situate at 156 Boulevard Haussmann, Paris in the Republic of France (hereinafter called "the French Company") of the other part. Supplemental to

(1) An agreement dated the 24th May 1921 and made between Holophane Limited (therein referred to as "the old English Company") of the one part and the French Company of the other part whereby the Old English Company granted to the French Company a licence for making, using and vending in accordance with the Old English Company's patents in the countries of Belgium, Italy, Spain, Portugal and Switzerland prismatic glassware for illuminating purposes and also the right to use the trade name of Holophane in the said countries for the term of 5 years with an option for renewal for a further term of 5 years from the 1st January 1925 upon the terms and conditions therein mentioned.

(2) An agreement dated the 28th January 1927 and made between the English Company of the one part and the French Company of the other part whereby after reciting that the French Company had exercised its option and that the terms of the said Licence had been extended for the further term of 5 years from the 1st January 1925 subject

to the payment of a minimum sales Royalty of £800 per annum during the extended term and that the benefit of the said agreement dated the 24th May 1921 had been transferred to the English Company (therein called "the New English Company") it was agreed that the said Licence should be extended for the further term of 10 years from the 1st January 1930 and that the French Company should pay to the English Company during the said extended term a royalty at the rate of 3% on the sale prices received by the French Company with a minimum of £1,000 in each year.

(3) An agreement dated the 25th February 1929 and made between the English Company of the one part and the French Company of the other part whereby the French Company was granted permission to grant a Licence to the Societa Anonima Italiana Isolatori Folembray (hereinafter called "the Italian Company") upon the terms and conditions therein mentioned it was provided that the minimum royalty of £800 payable under the said Agreement dated the 28th February 1927 until the 1st January 1930 should be increased to £1,000.

(4) An Agreement dated the 7th December 1936 made between the English Company of the one part and the French Company of the other part whereby it was agreed that as from the 1st October 1936 until the 30th September 1937 the Royalty payable by the French Company to the English Company should be at the rate of 6% on sale prices in lieu of the Commission of 3% provided in the above mentioned agreements and that the minimum Royalty payable by the French Company should be reduced from the sum of £1,000 to £500 per annum and that from and after the 30th September 1937 the Royalty should be at the rate of [fol. 231] 3% with a minimum of £1,000 per annum as provided by the above mentioned agreements which agreements are hereinafter referred to as "the Principal Agreements."

Whereas it has been agreed between the parties hereto that the minimum Royalty payable by the French Company for the years ending the 30th September 1938 and the 30th September 1939 shall be reduced to the sum of £500 per annum and such reduced minimum Royalty has been paid to the English Company for the year ending 30th September 1938.

And whereas the parties hereto desire to extend the term of the said Licence for the period hereinafter mentioned subject to the modification of the Principal Agreements in manner hereinafter appearing,

Now this agreement witnesseth that in consideration of the said agreement it is mutually covenanted and agreed as follows:—

(1) The minimum Royalty payable under the Principal Agreements shall be deemed to have been reduced to £500 per annum as from the 30th September 1937.

(2) The Licence granted by the Principal Agreements shall be extended as from the 1st January 1940 for the period of the present War between Great Britain, Franch and Germany and for twelve months after the signing of the Treaty of Peace between the said countries.

(3) The minimum Royalty due under the Principal Agreements for the period from the 1st January to the 31st August 1939 shall be the sum of £334. The remainder of the minimum Royalty for the year 1939 namely £166 for the period from the 1st September to the 31st December shall not be payable until the date of the said Treaty of Peace and if the Royalties paid for the last 4 months of the year 1939 exceed £166 such minimum Royalty will cease to be payable in respect of that period. If the Royalties paid for the said 4 months are less than £166 the difference between the amount of the said Royalties and £166 shall be payable at the date of the said Treaty of Peace.

(4) No minimum annual Royalties shall be payable during the continuance of this agreement.

(5) The Royalties payable as from the 1st January 1940 on sales shall be at the rate of 3% in lieu of the rate of 6% as provided by the Principal Agreements except that the Royalties on prismatic Glassware for illuminating purposes not covered by Holophane patents sold by the Italian Company shall be payable at the rate of 1% only.

(6) The French Company shall be at liberty to grant to the Italian Company during the period of the extended Licence hereby granted an extension of the Licence to that Company authorised by the Licence dated the 25th February 1929 subject to the conditions set out in the last mentioned Licence.

(7) All covenants and conditions contained in the Principal Agreements except so far as the same are modified or varied by this agreement shall apply to and be deemed to be incorporated in this present agreement.

[fol. 232] (8) Within the period of 6 months after the signing of Peace in the present War the parties hereto will commence discussions with a view to arriving at a basis for a new Licence to take effect upon the determination of the present Licence.

In witness whereof the Companies parties hereto have hereunto affixed their Common Seals the day and year first above written.

The Common Seal of Holophane Limited / Directors
was hereto affixed in the presence of \ Secretary

The Common Seal of The Societe Anonyme Francaise Holophane was hereto affixed in the presence of } Directors / Secretary

[fol. 233] "F"

Resumé of English-French Agreement Patents, Designs and trade marks in Belgium, Spain, Portugal, Switzerland, schedule attached.

Holophane Ltd. and Societe Anonyma Francaise Holophane (May 24, 1921)

License existing patents, or such patents as the English company may during the continuance of this agreement hereafter acquire by itself or its agents the inventions, articles and wares as the same are made or used by the English company in the United Kingdom within the territories. One person on Board of English company.

1. Five years from January 1, 1920.

Royalty quarterly at rate of 3% per annum (after trade discounts) on sale of all prismatic ware (whether subject of patent or not) there being a minimum.

Plus dividend on 500 shares (par 500 francs) of the French company when paid.

Plus £400 sales royalty accrued to December 31, 1920. If

this agreement is not renewed the Royalty of 1924 shall also be £400.

2. Accounting in France open to British company.

3. Accounting on 30th day of 3 - 6 - 9 - 12.

4. All articles under license to be marked under name Holophane and shall not sell such articles unless so marked.

5. Inspection of French factory, etc. by English company permitted.

6. No use of inventions or trade marks except under agreement.

7. Mutual exchange of discoveries.

8. Infringement in territory—obligation of French company unless British company chooses to prosecute.

9. No assignment of agreement with consent of British company.

10. French company shall not dispute validity.

11. French company shall take all steps to prevent export of prismatic glass to United Kingdom or to any country not licensed.

12. British compaay similar undertaking.

13. Arrears 21 days on Royalties or liquidate or on failure to appoint a Board member. The English company may revoke license but monies due still payable.

14. All taxes, annuities on patents, etc. payable by French company.

15. The English company may manufacture in the licensed companies for sale outside of the licensed territories.

16. On proper performance the French company may renew license for a further period of five years (1929) but minimum shall be £500 per annum and profits £400 per annum—Proper exportation is at least the expenditure of 200,000 francs in stock and developing sales and production and sale shall amount to at least £3000 per annum.

17. Contract interpreted a/c to British Law.

[fol. 234] 1929 February 25, 1929. Some parties. Supplemental to both previous agreements. A company called Societe a Anonima Italiana Isolatori Folembray. This new company to be granted a sub-license.

(a) The Italian company shall not make or sell any prismatic glass except in accordance with such designs. All marked "made in Italy".

(b) No assignment sub-license without consent of English company.

(c) French company will advise of prismatic shipments of Italian glass to Italian colonies.

(d) Italian company shall not permit export.

(e) All molds at end of contract to be sold to French company at valuation.

(f) All prismatic ware marked Holophane Italia.

(g) On breach contract to be terminated.

(1) French company to be responsible for breaches.

(2) Damages five times invoice value of any Italian prismatic glass exported.

(3) £1000 as liquidated damages if Italian company at end of contract and within two years uses name Holophane or sells prismatic glass like contract.

(4) Royalty of £800 shall be £1000.

(5) Italian glass shall be from royalty point of view be treated as French glass.

(6) All other provisions shall remain.

1927. January 28, 1937 Supplements agreement of May 24, 1921. License was extended from January 1, 1924 for a further term of five years on £800 Royalty, old British company was liquidated, a new English company was registered, all old contracts assumed.

French company wishes to renew for a period of ten years from January 1, 1930 and extensions are mutually agreeable.

New schedule annexed.

(1) For balance of present term (to January 1, 1930) pay at rate of £800 per annum.

(2) Extended to January 1, 1940 same territory.

(3) All terms repeated except clauses 1 and 16. Extended to ten year terms.

(4) A sales royalty to be paid 3% on sales prices received by the French company from the sales of all glassware made in accordance with the patents specified in the schedule hereto or which may hereafter be acquired by the new English company and of all prismatic glassware (whether or not the subject of one of the patents hereby licensed within the countries aforesaid. Royalty—April, July, October, December 1st on April 1, 1930. If royalty shall fall below

£1000 the French company shall pay to new English company the deficiency. Royalty based on dividends of 500 shs (500 francs) each continued.

[fol. 235] 1936 Recites all former agreements. French company asks a reduction of royalty of £1000 to £500—for one year—for year commencing on October 1, 1936—to which English company has agreed—if royalty is increased from 3% to 6%.

(1) Royalty increased from 3% to 6% minimum royalty from £1000 to £500

(2) and (3) Profits royalty remains.

(4) Royalties 1/1 to 9/30/1936—£750.

(5) From and after 9/30/37 3% minimum £1000 per annum as provided in original agreements. Minimum for three months from and including October 1, 1937 shall be the proportionate sum of £250.

1940. March 1, 1940 Recites all agreements. Wherein it has been agreed that year ending September 30, 1930 and September 30, 1939 royalty reduced to £500 having been paid for 1938.

Agreement to be extended

(1) Minimum royalty reduced to £500 per annum from September 30, 1937.

(2) License for war and twelve months thereafter.

(3) iMnimum royalty from 1/1 to 8/31/39 shall be £334. Remainder of minimum for 1939 namely £166. Shall not be payable until the date of the Treaty of Peace and if no royalties for last four months 1939 exceed £166 such minimum shall not be payable but if less balance payable on T. of P.

(4) No minimum during agreement.

(5) Royalties from 1/1/40 3% instead of 6% and Italian on prismatic glass not covered by patents 1%.

(6) Italian license continued by French company.

(7) All other covenants incorporated.

(8) A new license contemplated six months after T. of P.

Government's Exhibit 8

Telegrams: HOLOPHANE, SOWEST, LONDON.
Telephone: VICTORIA 2481 & 8288.
Works: GATESHEAD.

Holophane Limited
(Scientific Illumination)
Elverton Street,
Vincent Square,
London, S.W.1.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE FIRM.

Our ref	H.L.T/LH.
Your ref	

28th October, 1927.

Messrs. Holophane Company, Inc.,
342, Madison Avenue,
NEW YORK, U. S. A.,

Dear Sirs,

Referring to your letter of the 7th October, elaborating the Trading Agreement between us, I have submitted this for approval to the board of Directors at their meeting this afternoon, and have the pleasure to advise you that it has been accepted so that presumably matters will now be in a normal state between us and we shall be free to communicate backwards and forwards in regard to our various requirements.

Yours faithfully,

HOLOPHANE LIMITED.
BY:- H. Hepworth Thompson

170 "A"

"A"

CHAS FRANCK

OTIS A MYGATT

JOEL B LIEBERMAN

Holophane Company, Inc.

(Illumination Service)

Works Newark, Ohio

HOLOPHANE

ADDRESS REPLY TO
NEWARK, OHIO

October 7, 1927

Mr. H.Hepworth Thompson,Esq..
Managing Director
Holophane Ltd.
Vincent Square
Westminster,
London England,S.W.1.

Dear Mr. Thompson:

Confirming our understanding of today it is agreed that the so-called trading agreement of September 15th,1925 between your company and ourselves shall be modified to the extent that for the period of two years after November 1,1927 your company will place with us orders for the manufacture of at least 80% of all of your refractor requirements for South America at the rate outlined in the trading agreement, and further on all manufacture for your South American refractor requirements not placed with us you will pay us a sum equivalent to ten (10) per cent of your net selling price to your customers of all such goods not manufactured by us. Calendar quarterly itemized statements of your

C. CHAS FRANCK

OTIS A. MYGATT

JOEL B. LIBERMAN

Holophane Company, Inc.
(Illumination Service)
Works, Newark, Ohio

MAIN OFFICE
342 MADISON AVE
NEW YORK

ADDRESS REPLY TO
NEWARK, OHIO

Mr.H.Hepworth Thompson - October 7, 1927

South American Refractor sales are to be rendered to us within thirty days of the end of the quarter. Payment for the goods manufactured by us for your account is to be made as heretofore and on your sales for which we are entitled to a percentage, payment is to be made in United States funds with the rendition of the statement.

For the above period of two years it is also understood and agreed that there is to be a free interchange of commercial and engineering information so as to put each of us in possession of all information concerning commercial and engineering development advertising, and also including the right to visit and study the various plants of each party concerned so that each can have the benefit of the ideas tending to commercial and engineering progress which the other is advancing, including the furnishing of all samples requested by you on the above sale conditions. All orders placed for glassware other than refractors shall be applied to the quota.

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CHAS. FRANCK — OTIS A. MYGATT, PRESIDENT — JOEL B. LIBERMAN

Holophane Company, Inc.
(Illumination Service)
Works, Newark, Ohio

ADDRESS REPLY TO
NEWARK OHIO

Mr. H. Hepworth Thompson - October 7, 1927

Except as modified herein the original agreement shall remain in full force and effect and at the expiration of the present modification of the agreement for any cause whatsoever the original agreement shall continue unmodified in full force and effect as though this letter agreement had never been written and accepted.

Very truly yours,

HOLOPHANE COMPANY INC.

CHAS. FRANCK
CF MC

By Chas. Franck
Vice President

The above is accepted subject to confirmation by my board of directors.

[illegible]

Government's Exhibit 3

HOLOPHANE COMPANY, INC.

The regular monthly meeting of the Board of Directors of Holophane Company, Inc., was held at the office of the company, 342 Madison Avenue, New York, N. Y. on Thursday morning, November 7th, 1929 at 9:45 A. M.

Present: Charles Franck,
Joel B. Liberman
Helmuth M. Kiesewetter
John G. Jackson
Stuart F. Reed
Alma L. Rustin, Secretary.

Mr. Franck called the meeting to order and acted as Chairman and Miss Rustin as secretary.

The minutes of the previous meeting held October 3rd, 1929 were read and approved.

Mr. Franck stated that a new arrangement has been entered into with Holophane Limited of London whereby the existing arrangement is continued, except that the commission basis is altered as follows: The company is guaranteed a commission of $2500.00 per year representing 7 1/2% on the amount of refractor business done in South America and when this minimum is reached the company receives 5% on all business thereafter.

Mr. Franck also stated that conversations had been had between Messrs. Thompson, Franck and Liberman on the subject of the company acquiring an interest in the German Holophane business and Mr. Thompson agreed to take up the matter with his directors.

An informal report on progress of the company was presented and the directors expressed themselves as gratified with the company's progress.

Messrs. Franck and Liberman were authorized to purchase securities in their discretion (having in mind the uncertain state of the market) up to $50,000 for the company's account.

There being no further business to come before the meeting it was adjourned after the usual motion.

Respectfully,

Alma L. Rustin

Secretary.

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[fol. 241] GOVERNMENT'S EXHIBIT 10

Holophane Company, Inc.

Minutes of the Regular Meeting of the Board of Directors of Holophane Company, Inc., held November 2, 1933 at the office of the Company, 342 Madison Avenue, New York, N. Y., at 9:30 A. M.

Present: Charles Franck, Joel B. Liberman, John G. Jackson, Helmuth M. Kiesewetter, Stuart R. Reed.

Mr. Franck called the meeting to order and acted as Chairman and Mr. Liberman acted as Secretary.

Mr. Liberman stated that the Directors had been duly notified to attend the meeting.

The minutes of the annual meeting of stockholders and of the meeting of the Board of Directors held immediately thereafter on the 21st day of September, 1933 were read and approved.

Mr. Franck presented an informal review of the company's business for the current period.

He also reviewed the progress made with reference to Verlys glassware.

The Treasurer reported that since the last meeting of the directors $15,000 of the County of Cuyahoga bonds had matured on October 1, 1933, but had not as yet been paid. A compromise had been effected by which the bondholders will receive thirty per cent (30%) in cash and the balance in a new issue. He also wished to report that as of September 15, 1933 the purchase of $20,00- of United States Treasury bonds of 1941 at 100 14/32; also the purchase of $5,000 New York State bonds of 1941 as of October 27, 1933 at 100.34795; also that none of the $40,000 of the company's United States Liberty 4th had been listed as redeemed in the recent redemption but on advice of the Bankers Trust Company these bonds had sold by the Company for about 103 21/32 and with the proceeds called bonds had been bought at 102 2/32, which called bonds are to be exchanged for similar bonds under the call privilege.

Mr. Franck reported that Mr. Thompson, Manager of Holophane Limited had cancelled existing arrangements

concerning a bonus on South American business and exchange of engineering information, etc. as of November 1st.

[fols. 242-244] On motion duly made, seconded and carried, it was

Resolved that Mr. Franck convey to Mr. Thompson the company's willingness to purchase all rights in South America if satisfactory terms could be arranged.

There being no further business to come before the meeting it was adjourned after the usual motion.

Respectfully submitted, Joel B. Liberman, Secretary pro tem.

[fol. 245] GOVERNMENT'S EXHIBIT 11

An Agreement made the first day of February, 1944 between HOLOPHANE Limited a British Corporation incorporated under the English Companies Act 1929 whose registered office is situate at Elverton Street, Vincent Square in the City of Westminster (hereinafter called "the British Company") of the one part and HOLOPHANE Company, Inc., a Corporation organised under the laws of the State of Delaware in the United States of America whose registered office is situate at 342 Madison Avenue, New York, N. Y. (hereinafter called "the American Company") of the other part

Whereas:

(I) The British Company is engaged and carries on the business of the manufacture and sale of certain products known as Holophane Products sold under the trade mark or trade name HOLOPHANE among other countries in the Continent of South America including all Islands and Territories adjacent thereto, the West Indies, Bahamas, all islands in the Carribean Sea and the Island of Bermuda (hereinafter called "the said Territory") in which said Territory certain letters patent and trade marks have been issued and are now owned by the British Company.

(II) The British Company have entered into an agreement a copy of which is attached hereto with the Societe

Anonyme Francaise Holophane (hereinafter called "the French Company") dated the 24th May 1921 being a license to manufacture and sell during the period and within the Territory therein defined prismatic glass ware under the trade mark or trade name HOLOPHANE and whereby the British Company and the French Company agreed mutually to communicate each to the other discoveries relating to illuminating glass-ware and mutually undertook to pre- [fol. 246] vent the export of articles of prismatic glass into the territory of either of them and four agreements supplemental thereto dated respectively the 28th January 1927, 25th February 1929, 7th December 1936 and 1st March 1940 whereby the period of the operation of the said agreement dated 24th May 1921 was extended.

(III) The British Company has in connection with its business within the said territory entered into Agency Agreements copies whereof are attached hereto dated the 22nd January 1926 with the International General Electric Co. Inc. of New York, the 25th September 1928 with the General Electric S. A. of Rio de Janeiro and the 18th May 1940 with E. Lix Klett & Co. of Buenos Aires.

(IV) The British Company has agreed to sell and the American Company has agreed to purchase free from all debts, liens and encumbrances the business of the British Company (and all movable property, glass ware and the like used by the British Company in connection therewith) carried on by it in the said territory together with the good will thereof and All That the patents, designs, trade marks and trade names the property of the British Company in connection with the said business for the consideration and upon the terms and conditions hereinafter contained.

Now it is hereby mutually agreed as follows:

1. The British Company hereby sells, transfers and assigns to and the American Company hereby purchases and takes over as from the close of business on the first day of February 1944 free from all debts, liens and incumbrances the goodwill and the business (and movable property) of the British Company carried on by it within the said territory and the patents, designs, trade marks and trade names including the trade mark or trade name

[fol. 247] HOLOPHANE the property of the British Company in connection with the said business particulars whereof are set out in the Schedule hereto and for the purposes aforesaid the British Company grants to the American Company its successors and assigns the sole and exclusive right within the said territory to make use and sell articles embodying inventions the subject matter of the letters patent and the said trade mark or trade name HOLOPHANE and to practice the processes of all patents, applications for patents trade marks and trade names exclusively used in the said business.

2. The consideration for the said sale shall be the sum of $40,300 to be paid in cash or by Banker's draft to be paid upon the execution hereof.

3. The completion of the purchase shall take place at Barclays Bank, 95 Victoria Street, Westminster S. W. 1, London, England on the 17th day of March 1944 when the said consideration shall be paid and satisfied and the British Company shall thereupon or when called upon so to do but at the expense of the American Company execute and do all such further assignments, acts, deeds or things which may be required to transfer, assign to or vest in the American Company the business and movable property of the Company and the patents, trade marks and trade names and designs hereby agreed to be sold. The British Company covenants with the American Company and its assigns to warrant the above sale assignment and transfer of the property and rights thereunder sold unto the American Company and its assigns forever against the lawful claims and demands of all and every person and persons whomsoever but no guarantee or undertaking is given by the British Company to the American Company or its assigns with regard to the validity of the patents or trade marks sold. The British Company further covenant to give to the American Company and its assigns at the expense of the American Company and its assigns all such [fol. 248] assistance as may be reasonably required by the American Company or its assigns in defending the above sale assignment and transfer of the property and rights thereunder sold against the lawful claims and demands of all and every person and persons whomsoever.

4. The British Company shall retain and collect for its own account all cash at the Bank, moneys, credits, debts, bills and notes payable to or receivable by the British Company as at the close of business as aforesaid and the British Company shall pay, satisfy and discharge all its liabilities and obligations in connection with the said business existing as at the close of business as aforesaid and shall save harmless and indemnify the American Company againt all actions, claims and proceedings in respect thereof.

5. The American Company shall as from the date of completion of this purchase carry out and perform for its own benefit all contracts and engagements of the British Company in connection with the business of the British Company the benefit whereof is hereby sold and shall save harmless and keep indemnified the British Company from and against all actions, claims and proceedings in respect thereof.

6. The British Company shall retain possession of the books and accounts and other documents relating to the business hereby agreed to be sold and kept in England Provided however that the American Company shall at its own expense have full access thereto at all reasonable times and to take copies thereof or extracts therefrom.

7. The British Company will supply to the American Company details of all accounts of its customers within the said Territory commencing on the 1st January 1937 to the date of this Agreement including therein the names [fol. 249] of its customers, the annual amounts of their purchases with individual types and quantities and prices thereof. The British Company shall also at the request of the American Company provide full details with reference to any business in the Territory after January 1, 1937 or any correspondence after that date.

8. In the event of the American Company desiring to take proceedings in respect of the infringement or suspected infringement of any of the said letters, patent, trade marks or designs the British Company insofar as any of them shall be registered in its name hereby permits and authorises the American Company to take and prosecute

all such proceedings in the name of the British Company upon the American Company giving to it a proper indemnity against any liability in respect of the cost of such proceedings.

9. This agreement is subject to the obligations imposed by and with the benefits of the hereinbefore mentioned agreements with the French Company, the International General Electric Co., the General Electric (Sociedade Anonyma) and E. Lix Klett & Co. It is understood and agreed that in any future agreement with the French Company, the British Company will insert a paragraph to the effect that the French Company shall take all adequate steps to prevent the export of any of the articles of prismatic glassware (as referred to in preceding contracts between the British Company and the French Company) made or manufactured for sale within the limits of the aforesaid countries to said territory.

10. This agreement is to be construed and to take effect as a Contract made in England and the American Company hereby submits to the jurisdiction of the High Court of Justice in England and hereby appoints Messrs. Wansbroughs, Robinson, Tayler & Taylor, Solicitors of Bristol, England, and every partner for the time being of such firm for accepting service on behalf of the American Company of any writ, notice, order, judgment or other legal [fol. 250] process or document in respect of any matter arising out of this agreement and service of any such document as aforesaid on such appointee shall be deemed to be good service on the American Company for all purposes and the American Company elects domicile at the office of the said firm whose appointment hereunder shall continue until such time as the American Company shall give to the British Company notice in writing appointing some other firm of Solicitors practising in England in place of the said firm.

In witness whereof the British Company has caused its Common Seal to be hereunto affixed and the American Company has caused this agreement to be executed by its officers duly authorized in accordance with its Statutes the day and year first above written.

The Common Seal of Holophane Limited was hereunto affixed in the presence of:

Guy Campbell, John Simms, Directors; —— ——
Busbank, Secretary.

Executed by Holophane Company, Incorporated in accordance with its Statutes:

By: Charles Franck, President.

Attest: Alma L. Rustin, Secretary.

[fol. 251] THE SCHEDULE above referred to.

SOUTH AMERICAN TRADE MARKS

No.	Class	Mark	Valid to
ARGENTINE			
189910	IX	HOLOPHANE	April, 1950
167489	XIV	"	June 12th, 1947
176014	XX	"	July 23rd, 1948
BRAZIL			
61744	XIV	HOLOPHANE	October 24th, 1954
CHILE			
60246	XXXII	HOLOPHANE Between concentric circles	June 14th, 1958
INTERNATIONAL—includes Cuba & Mexico			
32942	—	HOLOPHANE	Sept. 20th, 1943
PERU			
17925	39	HOLOPHANE Between concentric circles	May 30th, 1949
URUGUAY			
34766	VI	HOLOPHANE	Feb. 25th, 1951
VENEZUELA			
5278	—	HOLOPHANE	October 1st, 1945

SOUTH AMERICAN PATENTS

No.	Granted
ARGENTINE	
30199	Nov. 12th 1929
37901	May 11th 1933
41540	June 12th 1934
47419	August 5th 1938
BRAZIL	
17291	Dec. 14th 1928
17640	May 29th 1929
26052	Nov. 8th 1938
28308	1941
CHILE	
5675	April 6th 1926

[fol. 252] GOVERNMENT'S EXHIBIT 12

This Agreement made the first day of February, 1944 between HOLOPHANE Limited a British corporation whose registered office is situate at Elverton Street, Vincent Square, in the City of Westminster (hereinafter called "the British Company") of the one part and HOLOPHANE Company, Inc., a Corporation organised under the laws of the State of Delaware, United States of America, whose registered office is situate at 342 Madison Avenue, New York, N. Y. (hereinafter called "the American Company") of the other part.

Whereas on the 15th day of September 1925 an Agreement was entered into between the British Company and the Holophane Glass Company, Inc. a corporation organized under the laws of the State of New Jersey, United States of America, and Holophane Illuminating Company, Inc. a Corporation organized under the laws of the State of New York, United States of America, the latter Companies being the predecessor Companies of the American Company and having been merged into and amalgamated with it, and

Whereas the American Company has acquired as of the present date all of the right, title and interest of the British Company in and to all of the business of the British Company including therein all of the good will thereof, movable property, Letters Patent, trade marks and trade names and including the trade mark or trade name HOLOPHANE insofar as the following territory herein mentioned is concerned, viz: The continent of South America, including all islands and territories adjacent thereto, the West Indies, Bahamas, all islands in the Carribean Sea and the Island of Bermuda (herein called "The Territory") but not otherwise.

Now this agreement witnesseth that for the consideration set forth in said agreement and in pursuance of the said agreement the British Company and the American [fol. 253] Company hereby for themselves and their respective Successors and Assigns hereby agree each with the other

1. To extend all of the terms of the said agreement made the 15th day of September 1925, between the British

Company and the other Companies aforementioned so as to include therein the territory above mentioned.

2. That the definition in clause 6 of the said agreement now reading:

> "Holophane Products" means "any product sold under the trade mark "HOLOPHANE" and any products manufactured or sold by the Vendor"

shall be altered to and henceforth be read as follows:

> " 'Holophane Products' means "any product sold under the trade mark HOLOPHANE as well as any products manufactured or sold by either party or any Company owned or controlled by it."

3. The said recited agreement dated the 15th day of September 1925 shall hence forth be read and given effect to in conjunction with this agreement and as if the alterations thereto effected by this Agreement had originally been incorporated therein and as if the American Company had been a party thereto so that the American Company shall be entitled to the benefits of and subject to the obligations of the said agreement.

4. By way of addition to the said agreement dated the 15th day of September 1925 and the furtherance of the mutual interests of the British Company and the American Company it is agreed that each Company shall at the request of the other provide full and free exchange of all research, technical, manufacturing and commercial information and data relating to products referred to and as defined in Clause 2 hereof. It is agreed that until such time as the British Company controls its own glass manufacturing facilities this clause insofar as it relates to the interchange of information concerning manufacturing technique and processes shall at the discretion of the American Company remain in abeyance.

[fol. 254] 5. This agreement is to be construed and to take effect as a Contract made in England and the American Company hereby submits to the jurisdiction of the High Court of Justice in England and hereby appoints Messrs. Wansbroughs, Robinson, Tayler and Taylor, Solicitors of Bristol, England, and every partner for the

time being of such firm for accepting service on behalf of the American Company of any Writ, notice, order, judgment or other legal process or document in respect of any matter arising out of this agreement and service of any such document as aforesaid on such appointee shall be deemed to be good service on the American Company for all purposes and the American Company elects domicile at the office of the said firm whose appointment hereunder shall continue until such time as the American Company shall give to the British Company notice in writing appointing some other firm of Solicitors practising in England in place of the said firm.

In witness whereof the American Company has caused these presents to be signed, sealed and delivered by its President and duly attested by its Secretary and the British Company has caused these presents to be signed on its behalf by Guy Campbell its Managing Director duly authorised in that behalf the day and year first above written.

Witness to the signature of Guy Campbell, on behalf of Holophane Limited: John Sims, 62 Londonwall Ec 2, London, Solicitor.

Holophane Limited, By: Guy Campbell, Managing Director; Holophane Company, Inc., By: Charles Franck, President.

Attest: Alma L. Rustin, Secretary.

[fol. 255] GOVERNMENT'S EXHIBIT 13

HOLOPHANE LIMITED

Scientific Illumination Experts
Elverton Street, Vincent Square, London S-W-1
Telegrams, Holophane Bewest, London
Telephone: Victoria 8062 (4 Lines)

Works Gateshead Our Ref. GC/EFC Your Ref.

Air Main. Private and Confidential.

12th April, 1943.

Chas. Franck, Esq.,
The Holophane Company, Inc.,
342 Madison Avenue, New York, U.S.A.

Dear Charlie,

I duly received your letter of the 15th February last making the offer to purchase the rights to sell Holophane products in South America etc., and have taken the opportunity of discussing the mater with the Board of Directors of Holophane Ltd.

The Directors view the matter in the same way as I do, that is, to say they regard the future prospects of export business in South America as being possibly the best potentiality of any of the export fields, and it is difficult to put a price on its value. The business the Company has derived in the past years and during even the present period of hostilities is considerable and very profitable. It is most probable the post war comparative prospects will prove very much better. Under these circumstances there is no real desire to sell.

However, in expressing their willingness to enter into arrangements to transfer to the American Company their rights, as set out in your letter, they are primarily influenced in so doing to cement the relations between the two Companies, as mentioned by us in our recent letters and to ensure an interchange of information and data relating to the respective products. Therefore, one of the considerations would be to provide for the full and free exchange of all research, technical, manufacturing and

commercial information and data relating to present and [fol. 256] future products of the two Companies in amplification of the present existing Agreement.

With this clear understanding embodied on the contract, the British Company would sell to the American Company the rights in question for the sum of $40,300., to be paid to the British Company upon the completion of the contract in one down payment.

If the above terms and conditions are satisfactory to you, then Joel can draft a contract embodying same, which, in turn I would submit to Mr. Sims for approval.

I am enclosing a list of our trade marks and patents in the South American countries.

Mr. Sims advises that we shall probably have to obtain formal consent to the sale from H.M. Treasury, but does not believe this will give rise to any difficulty.

In connection with this matter, we feel it is necessary to make clear to you our position with the French Company, and I send you herewith copies of the existing agreements.

There is no Agreement between the French and British Companies as exists between the American and British and the American and French Companies, apart from some provisions in our license to the French Company of 24th May 1921.

We have no information as to, if any, the original agreement between Mygatt and the French Company on the trade mark, which might or might not have contained some restrictions as to the sale of prismatic illuminating glass outside of France and her colonies.

As you will see the existing Agreements came to an end on the 1st January 1940. For some months prior to this, the French Company took the attitude that they wished to be free to sell prismatic glass not marked "Holophane" and not the subject of existing patents and claimed the right to sell such glass in our territory free of restriction, and stated they would not be willing to enter into a contract with us on the same basis as the 1925 inter-companies Agreements, nor would they extend [fol. 257] their agreement with you, if requested, to cover any extension of territory.

After some considerable discussion, it was finally agreed, as you will see from the Agreement of the 1st March 1940, to postpone any further discussion until one year after the conclusion of peace between the belligerants and continue in the meantime as before, and there the matter rested.

Awaiting your acknowledgment,

Yours sincerely, Guy Campbell.

[fol. 258] GOVERNMENT'S EXHIBIT 14

May 19, 1943.

Mr. Guy Campbell, Managing Director,
Holophane Limited,
Elverton St., Vincent Square,
London, S.W.1, England.
Re: *South America.*

Dear Guy:

I am pleased to enclose herewith copy of a letter dated May 18th from Joel Liberman to me, together with the two drafts of proposed agreements and, as you will find in Joel's letter, it covers our expectations of what Holophane Limited is to do further from now on.

I would only like to add that it is our understanding that when the time comes, which probably means after the War, that Holophane Limited will see to it that the French Holophane Company, if then still in existence, is to be put in its right place in regard to the South American agreement. You will note that we framed the definition covering Holophane products to take care of such controversies as you and we encountered sometime ago with the French Company.

With best regards, I am

Sincerely yours, —— ——, President.

Chas. Franck-EG.
Enc.

P.S. I have not made special reference in the above to your letter of April 12th, but I wanted to express once

more our appreciation for the thoughts mentioned therein, particularly on the first page as to the reasons why you decided to sell the South American rights to us.

[fol. 259] GOVERNMENT'S EXHIBIT 15

9th October 43.

J.S.

Dear Mr. Liberman,

The Board of Directors of Holophane Ltd. at its meeting a few days ago had before them for consideration your two letters to Mr. Campbell dated the 13th September, and also Mr. Franck's letter to Mr. Campbell of the 14th September 1943, and arrived at certain conclusions which they instructed me to pass on to you which deal with the legal questions in the above letters.

With regard to the physical property referred to by you I understand the British Company has no such property, but in case it should have I have amended recital No. 4 to include moveable property, i.e. glass ware and the like used by the British Company in connection with its business within the Territory, and have made a corresponding amendment in clauses L and S of Agreement No. 1. These amendments will, I hope, meet your wishes.

As to the "Bill of Sale" the Agreement as prepared is in usual English form and is completed when the purchase price is paid, but I have amended Agreement No. 1, clause 1, so that instead of the words "shall sell" etc, it will read "hereby sells" etc. and struck out the words "agreed to be" in clause 5 and provided in clause 2 that the consideration of $40,300 shall be paid upon the execution of the Agreement. I have also added the word "further" in front of "assignments, acts" etc. in clause 3. This is for the American Company's further protection in case any other documents are required to complete its title, such as formal assignments of patents and trade marks. These amendments I think will meet your point about the direct Bill of Sale.

With regard to your suggestion that the cost of assignments of the patents and trade marks amounting to about

$730 should be borne equally, as such costs are always borne by the Purchasers the Board do-- not see why the ordinary practice should be departed from, in any case it only represents a comparatively small sum. In the Agreement of the 6th June 1925 the British Company when it purchased the rights had to bear the out of pocket expenses of transfer.

With regard to the covenant of warranty and defending this is quite unusual in such a sale as the present and you will remember that no such provision appeared in the Agreement of the 6th June 1925 when the British Company acquired from the American Company the South American rights. However to meet you as far as possible in this direction the British Company would agree to the inclusion in Agreement No. 1 of a warranty in the terms of your draft, but without any guarantee or undertaking as to the validity of the patents or trade marks. With regard to defending the British Company cannot undertake this. It is for the American Company to protect its property but the British Company would covenant to give such assistance to the American Company at the latter's expense as might be reasonably required in defending the sale etc. and I have made an addition to clause 3 of Agreement No. 1 providing for the above.

As to the books of account referred to in clause 6 there are no such documents within the Territory belonging to the British Company as all their transactions were done through buying agents or direct customers. There are of course entries of such transactions in the books of account kept in London but these books include all the general business of the Company. Any necessary extracts from time to time are provided in clause 7 (old clause 6) but I have added to such clause an addition as to supplying detailed accounts of customers within the Territory commencing [fol. 260] from the 1st January 1937 which I think will meet your point.

The last matter to be dealt with I think is the disclosure of full information as provided in clause 4 of Agreement No. 2. When the proposed sale was discussed at a Board Meeting in April last this was a matter which the Board considered most important and was the main inducement

to their entering into the Agreement as without it there was no real desire to sell. It was felt that such a provision would cement the relations between the two Companies and ensure a complete exchange of information and data concerning their respective products. The Board appreciates what Mr. Franck says in his letter and provided the clause stands as drawn they would agree that an addition should be made to clause 4 as follows:

> "It is agreed that until such time as the British Company controls its own glass manufacturing facilities this clause insofar as it relates to the interchange of information concerning manufacturing technique and process shall at the discretion of the American Company remain in abeyance."

It is felt that clause 4 with the above addition sufficiently meets Mr. Franck's point and the Board do-- not see their way to go beyond this.

I enclose a fresh copy of the draft of Agreement No. 1 which embodies all the above points and I hope you will be able to agree the draft and cable accordingly. I do not send a further copy of Agreement No. 2 as the only addition is the one to clause 4 mentioned above and the inclusion of the words "moveable property" in the 4th line of the second recital after the word "thereof" and before the words "letters patent".

We have obtained the consent of H.M. Treasury to the proposed sale.

I am pleased to make direct contact with you after these many years and remember a pleasant evening I spent with you in Paris with my brother after we had been to see the late Mr. Mygatt whose death we all sincerely regret.

With kind regards,

Yours sincerely, (S.) John Sims.

J. B. Liberman Esq.,
342 Madison Avenue,
New York, U.S.A.

[fol. 261] GOVERNMENT'S EXHIBIT 16

September 13, 1943.

Guy Campbell, Esq.,
c/o Holophane Limited,
Elverton St., Vincent Sq.,
Westminster, London, England.

Agreement No. 1

Dear Guy:

All of your proposed agreements with reference to South America arrived and we have studied them carefully. Some modifications will be required. After various unsuccessful attempts to reframe Mr. Sims' agreements we thought it better to write as to the alterations required and ask that Mr. Sims kindly redraft the agreements accordingly, provided there is nothing essentially objectionable to you in our requests.

We will now take Mr. Sims' agreement and discuss each paragraph in detail.

Recitals I to III inclusive are satisfactory as the agreements with the I. G. E., G. E. and Lex-Klett can, if we so desire, be determined on various notice periods.

Recital IV is satisfactory, except that we would like for technical reasons to have the sale assume to have included physical property, glassware, and the like, no matter how little might be involved,—which might be found in South America so that the sale will be considered to be not only one of trade marks and good will and patents, but some physical property as well, this element of "property" to be repeated where the context requires it.

Taking up the clauses in the body of Mr. Sims' agreement, our main point of difference is that the agreement prepared by us operates as a direct Bill of Sale with no further instruments required except assignments in the language of the country.

In Mr. Sims' form the payment is made for an agreement to convey, i.e. an actual Bill of Sale by Holophane Limited later might be required. Inasmuch as the mechanics employed for closing the transaction will be for us

to send a signed instrument (when the final form is agreed upon) to Barclays Bank with our check to be delivered to you on delivery of the agreement signed by you to the bank for us, we see no reason why the instrument to be signed should not be a final Bill of Sale because if the trans- [fol. 262] action stopped right there and for some reason the South American assignments could not be completed we could run along for an indefinite period with the trade marks and patents standing in your name. Again, a Bill of Sale if required by us after the transaction was completed following Mr. Sims' agreement would be nothing but the same agreement over again in slightly different language.

Clause 2 should be altered to be more in line with our suggestion, that is the consideration is to be paid on the execution of the agreement.

Clause 3: Because of our desire for an agreement in the form of a Bill of Sale, this clause should be rewritten so that the British company grants the property and rights sold to the American company, more in line with the form shown in our agreement on page 2. There will be no fees or out-of-pocket expenses except in connection with the assignment of patent and trade mark rights and we have an estimate of these from Marks and Clerk here to be about $730.00 and our suggestion would be that this cost shall be borne equally by the companies.

In our opinion there should be a covenant of warranty by the British company at this point (after clause 3) along the lines of that shown on page 3 of our agreement. Inasmuch as Mr. Sims is concerned that a guarantee on your part of the validity of the trade mark or patent rights might be involved, we suggest the addition of the following in our original paragraph which might take care of this matter "No guarantee or undertaking is given by the British company to the American company with regard to the validity of the patents or trade marks sold."

Your clauses 4 and 5 are satisfactory.

Your clause 6 would leave us greatly handicapped in view of the fact that we do not know much about the business, have no lists of customers and will not be in a position for some time (at best) to have anybody come to Lon-

don to see what we would require from your records to put us in possession of data which would enable us to carry on the business. We will certainly require a resumé of your operation in South America, separate lists of the larger accounts for the three years before the war and the years subsequent to the war. In a few words, as we put it in our contract, we must be put in a position by you to "carry on the business".

Your clauses 7, 8 and 9 are satisfactory.

Please let us hear from you as soon as possible.

Sincerely yours, Joel B. Liberman.

JBL:ALR.

[fol. 263] GOVERNMENT'S EXHIBIT 17

This deed is made the 13th day of November One thousand nine hundred and forty seven between Holophane Limited a Company incorporated under the English Companies Acts whose registered office is situate at Elverton Street, Vincent Square in the City of Westminster, England (hereinafter called "the English Company") of the one part and The Societe Anonyme Holophane a Corporation incorporated in accordance with the laws of the Republic of France whose registered office is situate at 156 Boulevard Haussmann, Paris (hereinafter called "the French Company") of the other part.

Whereas:

(i) The English Company is the Proprietor of Letters Patent relating to the manufacture of prismatic glassware for illuminating purposes as defined in clause 17 hereof and hereinafter referred to as "prismatic glassware" and manufactures and sells such prismatic glassware (and lighting fittings embodying such glassware) under the registered trade mark "Holophane."

(ii) The French Company under and by virtue of the agreements short particulars whereof are set out in the 3rd part of the Schedule hereto and are hereinafter referred to as "the said Licence Agreements" is selling prismatic glassware under the trade name or trade mark "Holophane" within the Territories and upon and subject to the covenants and conditions therein contained.

(iii) The parties hereto have agreed that the said Licence Agreements and all the terms and conditions thereof shall cease and determine as is provided in clause 16 hereof and that the English Company shall grant to the [fol. 264] French Company in lieu thereof the Licence which is herein contained.

Now this deed witnesseth:

1. That in pursuance of the said agreement and in consideration of the royalties and payments hereinafter reserved and payable and of the covenants and agreements on the part of the French Company hereinafter contained the English Company hereby grants to the French Company and its permitted assigns or licensees the sole full and exclusive license and authority to manufacture, make, use and sell within the territory defined in the 1st part of the Schedule hereto (hereinafter referred to as the "said Territory") prismatic glassware under the trade name or mark "Holophane" particulars of which are set out in the 2nd part of the Schedule hereto.

2. This Licence shall subject as is hereinafter provided be for the term of five years from the First day of January One thousand nine hundred and forty seven.

Now it is hereby mutually covenanted and agreed as follows:

Royalties

1. The French Company shall during the subsistence of this Licence pay to the English Company by way of royalties a sum equal to four per centum of the net selling price of all prismatic glassware as shown on the invoices which shall have been sold during the six months preceding the date upon which such royalty shall become payable provided that such royalty shall not be less than the sum of Seven hundred and fifty pounds in respect of [fol. 265] each of the first two years of the period of this Licence and One thousand pounds in respect of each of the succeeding years of the said period.

Minimum Royalty

2. The minimum royalty payable by the French Company under the provisions of the immediately preceding

clause shall be reduced upon the occurrance of either of the following events that is to say:

(a) If it is mutually agreed that it has been impossible for the French Company to do any business in any particular year in any of the countries comprised in the said Territory by reason of circumstances beyond its control then the minimum annual royalty for the particular year affected shall be reduced in the case of this provision applying to (1) Belgium and Luxemburg by Twenty five per centum (2) Spain by Twenty per centum (3) Italy by Forty five per cen*d*um (4) Portugal by Five per centum (5) Switzerland by Five per centum.

(b) If at the request or with the agreement of the French Company the English Company delivers prismatic glassware to any part of the said Territory and makes a normal profit on such business then the minimum royalty for the year in which such business is completed shall be reduced by an amount equal to Four per centum of the net sum received by the English Company for such prismatic glassware.

Books of Account and Payment of Royalties

3. The French Company shall keep true and particular accounts of all matters connected with the manufacture and sale of prismatic glassware in the Territory and will within one month of the Thirtieth day of June and the [fol. 266] Thirty first day of December in each half year commencing with the Thirtieth day of June One thousand nine hundred and forty seven deliver to the English Company particulars in writing of all sales of prismatic glassware sold in the said Territory during the preceding six months and such account shall be verified by notarial declaration if so required by the English Company at its own expense and within one month after such account shall have been delivered and accepted by the English Company the amount so found due shall be paid in Sterling by the French Company to the English Company.

Custody and Inspection of Books

4. The books and accounts so to be kept by the French Company shall be kept at its registered office in Paris and

shall if required be produced for inspection by an Officer or Officers of the English Company who shall be at liberty to take copies or extracts therefrom.

Marking Goods and Manufacture

5. The French Company shall cause every article made, manufactured or sold by them within the said Territory under this Licence to be equal in quality and finish to prismatic glassware manufactured by the English Company and shall cause every article so made, manufactured or sold to be clearly and indelibly marked with the name "Holophane" and the country of manufacture and will not sell any article unless so marked.

Warranty

6. The English Company give no warranty as to the validity or subsistence of any of the said Trade Marks the use of which Trade Marks within the said Territory is granted to the French Company hereunder and the French Company shall not make any claim against the English [fol. 267] Company in respect of or raise any question or take any objection to the validity thereof on any ground whatsoever.

Renewal Fees

7. The English Company shall during the subsistence of this License pay all renewal fees and (subject as hereinafter provided) do all things that may be necessary to keep on foot the said Trade Marks.

Communication of Further Inventions and User

8. Each of the parties hereto shall at all times during the subsistence of this Licence forthwith communicate and explain to the other any further discoveries or developments, inventions, additions to or improvements relating to the design, manufacture, production and use of prismatic glassware which they may make, discover or which may be communicated to them or come into their possession or knowledge (whether the same shall be patented or patentable or not) together with the mode of working or carrying the same into practicable effect and each of the

parties hereto shall at the request but at the cost of the party requiring the same make or supply all drawings and specifications necessary for the proper working, development or protection of any such further inventions, additions or improvements to the intent following that is to say:

The French Company shall have the right to take out Letters Patent or other like protection covering the design manufacture and use of prismatic glassware within the said Territory during the subsistence of this Licence. In the event of the French Company deciding not so to apply for Letters Patent or other like protection on inventions communicated to them they shall forthwith in writing inform the English Company of such decision and there- [fol. 268] upon the English Company shall be entitled to apply for Letters Patent or other like protection in respect thereof in any part of the Territory and the French Company shall only be entitled to operate these Patents under separate licence to be granted by the English Company upon and subject to such terms and conditions as may be mutually agreed.

9. (i) Neither Company shall apply for Letters Patent or Trade Marks in respect of lighting equipment using prismatic glassware in any part of the Territory of the other of them except with the prior consent in writing of the other.

(ii) Nothing herein contained shall affect the right of the English Company or any person, firm or corporation appointed by it to manufacture prismatic glassware within the said Territory for the purpose of sale by the English Company outside such Territory.

10. The French Company shall at all times during the subsistence of this Licence at their own cost and expense take all necessary steps and proceedings to prevent any infringement within the said Territory of the registered Trade Marks or the trade name "Holophane" the subject matter of this Licence so as to maintain the rights of the English Company as the Proprietors thereof, the property wherein shall at all times be and remain vested in the English Company.

[fol. 269] 11. Neither the English Company nor the

French Company or any subsidiary or Company associated with either of them or any agent of either of them shall export or knowingly permit the export of prismatic glassware into any part of the Territory of the other Company or into the Territory of Holophane Company Incorporated of America as defined in the 4th part of the Schedule hereto.

12. The French Company shall not at any time during the subsistence of this Licence transfer to any third party the benefit of this Licence or grant any third party whether by way of sub-Licence or otherwise any right whatsoever to manufacture prismatic glassware or use the Trade Mark "Holophane" or name except with the consent in writing of the English Company and then only upon such terms and conditions as the English Company may approve. These conditions will normally include a penalty clause to ensure performance by the sub-licensee.

13. The English Company shall be entitled during the subsistence of this Licence to appoint with the approval of the Board of Directors of the French Company (which approval shall not be unreasonably withheld) a person as a Director of the French Company. The English Company shall be entitled to remove any person so appointed by it and to appoint another in his place or stead and any such appointment or removal shall be effected by a Reso- [fol. 270] lution of the Board of Directors of the English Company a copy whereof signed by the Chairman of the English Company shall be lodged at the registered office of the French Company in Paris.

14. Any agreements for sale of the business or any part of the business and any sub-licence which may (with the consent of the English Company in respect of any sub-licence granted by the French Company) be granted shall contain all the relevant provisions of this licence.

15. Upon the termination of this Licence whether by effluxion of time or otherwise the French Company shall cease to trade within the said Territory in prismatic glassware whether or not manufactured under the said Letters Patent and/or sold under the said Trade Mark or Trade Name "Holophane" and shall transfer to the English Company all patents and trade marks valid in the said

Territory taken out or registered in the name of the French Company covering or relating to the manufacture, design or use of prismatic glassware.

16. The before mentioned prior Licence Agreements and all the provisions thereof shall cease and determine as from the Thirty first day of December One Thousand nine hundred and forty six subject to the mutual adjustment [fol. 271] between the parties hereto of their respective rights and obligations thereunder.

17. For the purposes of this licence "prismatic glassware" means prismatic glassware for illuminating purposes and shall be construed as including illuminating equipment of any transparent material such as transparent plastics or any other glass substitutes which are formed by any suitable process with a prismatic structure, but shall not be deemed to include motor car lamp glasses and indicator glasses, ordinary Fresnel lenses and (subject to agreement between the parties in writing) other similar glasses.

18. This Licence is to be construed and take effect as a Contract made in England and the French Company hereby submits to the jurisdiction of the High Court of Justice in England and hereby appoints its Solicitors Messrs. Herbert Smith & Company of No. 62 London Wall in the City of London and their Successors in business and every clerk for the time being of that firm to be the agent in London of the French Company for the purpose of accepting service on its behalf of any writ notice order judgment or other legal process or document in respect of any matter arising out of this Licence and such appointment shall not be revocable and service of any document on such appointee shall be deemed to be good service on the French Company for all purposes and the French Company elects domicile [fol. 272] at the office of the said Messrs. Herbert Smith & Company or their successors in business.

In witness whereof the English Company has hereunto caused its Common Seal to be affixed and the President of the French Company duly authorised has on its behalf duly signed this Licence the day and year first above written.

The Schedule

Part 1

Territory

The said Territory referred to in clause 1 are the countries of Belgium, Italy, Luxemburg, Portugal, Spain and Switzerland, and their Colonies, Protectorates and mandated Territories.

Part 2

Trade Marks

Country	Mark	Registered No.
Belgium	Holophane	44255
Italy	Holophane	2640
Portugal	Holophane	59306
Spain	Holophane	Application filed 21.9.43
Switzerland	Holophane	80628

Part 3

Agreements between the English and French Companies dated:

May 24th, 1921. January 28th, 1927. February 25th, 1929. December 7th, 1936. March 1st, 1940.

[fol. 273]

Part 4

Territory of Holophane Company, Inc.

All that part of the Continent of America north of the Panama Can-l and adjacent Islands, the Phil/ip-ine Islands, the Republic of Cuba, the Empire of Japan, the Continent of South America, including all Islands and Territories adjacent thereto, the West Indies, Bahamas, all Islands in the Carrib-ean Sea and the Island of Bermuda.

The Common Seal of Holophane Limited was hereunto affixed in the presence of:

Directors, J. S., S. E.; Secretary, C.H.B.

Signed by: ——, as President of the French Company for and on its behalf in the presence of: ——, Ex.

[fol. 274] GOVERNMENT'S EXHIBIT 18

Please reply to: Brantwood Works, Tariff Road, Tottenham, London, N.17.

HOLOPHANE LIMITED

Scientific Illumination Experts

Elverton Street, Vincent Square, London S-W-1
Telegrams: Holophane Sowest, London
Telephone: Victoria 8062 (4 Lines)

Works Gateshead Our Ref. GC/LOM. Your Ref.
Air Mail. Copy Sea Mail.

4th July, 1945.

Chas. Franck, Esq.,
The Holophane Co., Inc.,
342 Madison Avenue,
New York 17, N.Y., U.S.A.

Dear Charlie,

Inter-company Buying

I thought I would advise you that I have circulated instructions setting out very clearly the arrangements covered by your letter of June 11th last, the original of which will be reported to our Board of Directors, noted in our Minutes and attached to the inter-company Agreements.

For your information, all export enquiries and orders are being referred to Mr. Bansback, who for the time being will handle these enquiries so as to ensure the complete understanding of the execution of such enquiries, and it will be in order for anybody in your organisation dealing with these matters to contact him on any details.

Yours sincerely, Guy Campbell.

[fol. 275] GOVERNMENT'S EXHIBIT 19

June 11, 1945.

Mr. Guy Campbell,
Managing Director,
Holophane Company, Ltd.,
Elverton Street,
Vincent Square,
London SW 1,
England.

Re: *Intercompany Buying.*

Dear Mr. Campbell:

Referring to previous correspondence, particularly your letter of December 29, 1944, mine of January 26, 1945, and yours of March 23, 1945, I give you below the understanding that we reached after discussing this verbally in New York.

1. Supplies ordered by, shipped and invoiced from one company to another, to be paid for in accordance with the 1925 agreement, i.e., factory costs plus 30% at place of manufacture (plus any actual disbursements incurred in shipping, etc.).

2. Supplies on the instructions and the responsibility of the purchasing Company shipped *direct* and *invoiced* by the selling Company to a customer into the territory of the purchasing Company, to be paid for at factory cost plus 30% at place of manufacture (plus any actual disbursements incurred in shipping, etc.) plus a further 10% of the invoiced price to such customer and the balance as between the sum of the above and the selling price to the customer being the profit remaining due to the purchasing Company.

3. Supplies on the instructions and the responsibility of the purchasing Company shipped *direct* and *invoiced* by the selling Company as a result of direct and definite specification and engineering work of that Company applied to the particular order in question, to a customer into the territory of the purchasing Company, to be paid for at Factory cost plus 30% at place of manufacture (plus any actual disbursements incurred in shipping, etc.) plus

a *further 20% of the invoiced price* to such customer and the balance as between the sum of the above and the selling price to the customer being the profit remaining due to the purchasing Company.

[fol. 276] With regard to any direct inquiries or purchase orders received by either company from the territory of the other, it is understood same shall be first referred to the other Company by cable or letter as the circumstances indicate, for instructions as to the disposition of such inquiries or orders.

Please acknowledge your agreement to this by signing this letter under "Accepted."

Yours very truly, Holophane Company, Inc., Chas. Franck, President.

Chas. Franck, MAC.

Accepted: Guy Campbell, Managing Director, Holophane Ltd., London.

[fol. 277] GOVERNMENT'S EXHIBIT 20

HOLOPHANE LIMITED

Scientific Illumination Experts

Elverton Street, Vincent Square, London S-W-1
Works Gateshead

Telegrams: Holophane Sowest, London
Telephone: Victoria 8062 (4 Lines)

Our Ref. CHB/BL Your Ref. CF/EG

4th August, 1944.

Copy Air Mail; copy Sea Mail.
Chas. Franck Esq.,
Messrs. Holophane Company, Inc.,
342 Madison Avenue, New York.

Dear Mr. Franck,

I am in receipt of your letter of the 20th June, in connection with South American enquiries, and in replying

I am taking the opportunity of setting out the position up to date.

Since the transference of the sales rights in that territory to Holophane Company, Inc. it has been our desire and endeavour to deal with these enquiries entirely in accordance with your wishes. Hence, directly we had the first order we telegraphed you for your instructions, at the same time suggesting that as all the material was of English design glass, for which there did not appear to be any American equivalent, we should execute the order on your behalf on inter-company terms, according to our letter of the 16th August 1940 and your letter agreeing to same dated 4th September of that year, in reverse. You cabled your agreement of this suggestion, and we proceeded accordingly.

The next enquiry related to the Buenos Ayres Gt. Southern Railway Co. and we again telegraphed you details asking whether we should deal with it on the lines referred to above. This brought your telegraphic reply stating that on this and future similar orders requiring material not made in U. S. we were to reserve you 25% commission on the net sales price. We confirmed this ex- [fol. 278] change of telegrams on our letter of the 18th May, to which you have replied in yours under acknowledgment.

I have recapitulated these facts for you to see that we have been following your wishes in dealing with these enquiries. We see that you now withdraw the permission given by you in your last telegram and wish us to refer any enquiries from South America to you first as they come in, before we deal with them, which we shall do.

With regard to the question raised in the second paragraph of your letter as to the time when credit should be passed for your 25% commission, we have no objection to issuing this credit when the goods are invoiced. However, you are probably not aware of the present Government currency restrictions that apply here, and in some cases it is a considerable time before we receive the actual cash payment. As you state, we would not supply any material without first being satisfied as to the credit standing of the customer, but our understanding of the position

is that we are dealing with these South American orders on the American Company's behalf, out of which transactions we make no profit, and we feel that you would scarcely expect to receive any cash payment until we have received the proceeds of these shipments. You will recollect that this is in line with the arrangement regarding credit responsibility included in the letters of August and September 1940 referred to above.

As these enquiries are likely to continue to come to us for a time, we should welcome some standard basis for dealing with them, that would avoid as much as possible the exchange of telegrams, etc., and the consequent delay that this may cause.

I wish to assure you of our desire to render all possible assistance that you may need in fostering Holophane business in South America, and it is the writer's hope that this letter may be of mutual help to this understanding.

Yours faithfully, Holophane Limited, Chas. H. Bansback, Director & Secretary.

C. H. Bansback.

[fol. 279] GOVERNMENT'S EXHIBIT 21

October 26, 1944.

Guy Campbell, Esq.,
Holophane Limited,
Brantwood Works,
Tariff Road,
Tottenham, London N. 17,
England.

Re: *South America.*

Dear Guy:

In reply to your letter of September 25th and Mr. Bansback's of September 22nd, I wish to thank you both for all information contained therein.

I should like today to try to settle this South American situation in a definite manner in as far as any shipments to be made by you on past orders are concerned; then deal

with any future possible shipments of similar nature by you; and finally in a separate letter with orders that either company might obtain for the other company's territory.

I do not think that in principle we should adhere to our inter-company agreement of September 15, 1925 and in that respect I accept fully the policy laid down in your letter of July 26th of this year to Mr. Bansback. All this means, as I see it, the following:

(1) On the recent transactions still incompleted, particularly the order for 800 Hedralite panels, you are to retain from the actual selling price the prime cost plus 30%, as per the 1925 agreement, plus 10% of selling price; the balance to be credited to Holophane Company, Inc.

(2) Contrary to Mr. Bansback's remark on Page Two, Paragraph Two of his letter of September 22nd, we cannot accept your position that this order, being the result of past efforts on your part, justifies for that reason any special consideration. We have paid what up to now looks to us like a very appreciable amount for the sales rights and naturally with that goes the good will that you may have created in the past.

(3) Therefore, on all future orders, as stated above, we will be governed by the inter-company agreement of 1925 which means that on any orders that you or we may receive for types manufactured only by you, we will be able to pay you the factory cost plus 30% and in addition to that out-of-pocket expenses for handling the shipping.

This, in my opinion, deals clearly with the South American situation as it stands at present and as it may present itself in the future.

Yours sincerely, —— ——.

Chas. Franck; V; cc Mr. Liberman, Mr. Cameron, Mr. Ponkop, Order Dept., Via Airmail to Mr. Campbell.

[fol. 280] GOVERNMENT'S EXHIBIT 22

October 27, 1944.

Guy Campbell, Esq.,
Brantwood Works,
Tariff Road, Tottenham,
London N. 17, England.

Re: *Inter-company relations on orders received by you or to be shipped by you into territories of the American company, and vice-versa.*

Dear Guy:

In a separate letter I have dealt with orders received from South America.

I now wish to deal with orders received by you for shipment into other territories of the American company or vice-versa. This does not apply, of course, to our respective home territories (in our case North America, etc.) as the companies serve their territories direct in all cases, but to territories other than the home territories or South America where service from one company or the other might arise in connection with a particular order.

It seems necessary to me that we differentiate between orders developed, i.e., engineered, and shipped by the one company for the other company's territory and, on the other hand, orders not requiring any actual engineering help in order to obtain them by one or the other company but which must be shipped by the one company into the territory of the other because of the fact that the one company has available that particular type while the other company, into whose territory it is to be shipped, does not make this particular type. On these orders the conditions I propose as final for handling such out-of-territory shipments are the following:

(1) Where the one company plans and engineers the demand for shipment to the other company, the compensation for this will be on the following basis: The one company will charge manufacturing costs plus 30%, plus 30% on the sum of the first two figures (this latter 30% as compensation for the engineering work). All above f.o.b. fac-

tory. If the company shipping the order has any out-of-pocket expenses either for shipping to port, consular invoice charges, etc., it will be added in amounts actually laid out.

(2) On all orders shipped by one company into the territory of the other company where no engineering or sales efforts of the one company enter into the transaction, then the one company will charge to the other manufacturing cost plus 30%, plus out-of-pocket expense as referred to above.

I cannot think of any other combinations but if they should arise, then they must be dealt with separately in each case on their merits.

Sincerely yours, —— ——.

Chas. Franck: ls; cc JBL, ADC, EP, Order Dept., Airmail to GC.

[fol. 281] GOVERNMENT'S EXHIBIT 23

Please reply to: Brantwood Works, Tariff Road, Tottenham, London. N.17.

HOLOPHANE LIMITED

Scientific Illumination Experts

Elverton Street, Vincent Square, London S-W-1
Telephone: Victoria 8062 (4 Lines)
Telegrams: Holophane Sowest, London

Works Gateshead Our Ref. GC/LOM. Your Ref.

Air Mail. Copy Sea Mail.

29th December, 1944.

Chas Franck, Esq.,
The Holophane Company, Inc.,
342 Madison Avenue,
New York 17, N.Y., U.S.A.

Dear Charlie,

I duly received your letters of the 26th and 27th October last relating to the future terms covering inter-company

buying, and have given the matter very careful thought.

I think you will agree we ought to keep these matters as simple as possible.

We are governed, in the main, by the 1925 Agreement. All we have to really consider, are the exceptional cases, therefore, I suggest, which is in line with your original idea, that we simplify the matters as follows:

A. Supplies ordered by, shipped and invoiced from one Company to the other, to be paid for in accordance with the 1925 Agreement, i.e. Factory cost plus 30% at place of manufacture (plus any actual disbursements incurred in shipping, etc.).

B. Supplies on the instructions and the responsibility of the purchasing Company shipped *direct* and *invoiced* by the selling Company to a customer into the territory of the purchasing Company, to be paid for at Factory cost plus 30% at place of manufacture (plus any actual disbursements incurred in shipping, etc.) plus a further [fol. 282] 10% of the invoiced price to such customer and the balance as between the sum of the above and the selling price to the customer being the profit remaining due to the purchasing Company.

Item "A" covers purchases as provided by the 1925 Agreement and, in practice, the transactions covered by item "B", under normal conditions, will be few and far between and will be quite exceptional.

I am sure the above clear cut issue will commend itself to you, and I await your confirmation.

Yours very truly, Guy Campbell.

[fol. 283] GOVERNMENT'S EXHIBIT 24

January 26, 1945.

Guy Campbell, Esq.,
Brantwood Works,
Tariff Road, Tottenham,
London N. 17, England.

Dear Guy:

Your letter of December 29th on Inter-Company buying received. I think on Item A we understand each other

but B the way you express it is somewhat complicated but assume refers to a case of our ordering from you, for instance, some material for Holophane Ltd. material for shipment to South America for which we would give you an extra 10%. That would not suit us for reasons explained in my letter of October 26th. Maybe I misunderstood your paragraph but as I said on October 26th the South American situation will have to be governed for all future orders by the Inter-Company agreement of 1925.

What you leave out in your letter is in my opinion very important and perhaps more for the English company's benefit than for ours and that is to recognize specifying work of one company where the ultimate destination is the territory of the other Holophane company. See Item 1 of my letter of October 27th to you. When I say I think more to your benefit than to ours I am just guessing or assuming that there will be more of these cases after the war, particularly that will have to be dealt with here in America between our engineers and prospective buyers or their American agents; or vice versa.

Our engineering service of this nature is very costly and so is yours if it is applied in the same manner and in addition to that we pay salary *and* commission to our men on any business they create. So it would be hard to find, for instance, someone of our regular sales force who would be sufficiently interested to follow through with a prospect for Russia, your territory, where the consulting engineer has headquarters in Chicago or New York. We could say, well we will just refer those inquiries to you but that wouldn't help your case if the consulting engineer is to be the decisive factor but we couldn't get the interest of our men in this kind of business unless they could see something in line with their regular efforts and the whole scheme is based on recognizing the most costly part of our selling and that is our engineering service. Likewise that should apply on any such cases that might come up in England for shipment into some of our territory. I feel convinced that if we do not make some special provision those orders will never develop and one or the other Holophane company will suffer.

In view of the aforesaid, I am not in a position to con-

sider your letter of December 29th as containing acceptable final terms any more than you apparently considered my letters of October 26th and 27th.

Yours very sincerely, —— ——.

CF:V.

[fol. 284] GOVERNMENT'S EXHIBIT 25

Sea Mail.

Please reply to: Brantwood Works, Tariff Road, Tottenham, London, N.17.

GC/LOM.

23rd March, 1945.

Chas. Franck, Esq.,
The Holophane Company, Inc.,
342 Madison Avenue,
New York 17, N.Y., U.S.A.

Dear Charlie,

I am disappointed with your letter of the 26th January, as it would seem we are at cross purposes, which it is so difficult to make clear, at times, by correspondence.

For instance, I do not see any difference between the conditions that apply to South America and/or, say, India. One is now simply the territory of the American Company and the other the territory of the British Company.

Any arrangements covering the purchase by one Company from the other of products to suit the convenience of the purchasing Company, is in pursuance of the original inter-Company agreement and in all cases must be equal and reciprocal. There is and could be no other interpretation of the understanding—and I have no other in mind as acceptable as the South American agreement is simply an extension of the 1925 agreement.

My letter of the 29th December last covers under item "A", reading as follows, the terms expressed by the original agreement:

> "Supplies ordered by, shipped and invoiced from one Company to the other, to be paid for in accordance

with the 1925 Agreement, i.e. Factory cost plus 30% [fol. 285] at place of manufacture (plus any actual disbursements incurred in shipping, etc.)."

This provides for, in accordance with the agreement, a price equal to factory cost plus 30% delivered at place of manufacture. This plusage of 30% is and should be the only element of profit for the selling Company entering into any of these inter-Company transactions.

Under date of the 12th July, 1940, you wrote:

"I am familiar with Clause 3 of our inter-company agreement of September 15, 1925 but I do think that the meaning of it was that where we had to furnish U.S.A. manufactured products on your orders, allowing us only 30% over our costs, this should exclude any cases where there is any work involved to be done by us other than just shipping on orders placed with us to be billed through you. Therefore, I feel that the present practice as outlined on Page 5 by you checks in general with the procedure accepted by both of our companies with the exception, however, of any inquiries which come to us and on which we are to do work of any kind, be it quoting or even of a more definite nature in selling. On these propositions the 30% over and above our factory cost should be invoiced to you, but in addition to that you should reserve to us a 10% commission on the sales price."

Item "B" of my letter of the 29th December last, reading as follows, has been carefully phrased to precisely cover the circumstances raised by your own observations:

"Supplies on the instructions and the responsibility of the purchasing Company shipped *direct* and *invoiced* by the selling Company to a customer into the territory of the purchasing Company, to be paid for at Factory cost plus 30% at place of manufacture (plus any actual disbursements incurred in shipping, etc.) plus a further 10% of the invoiced price to such customer and the balance as between the sum of the above and the selling price to the customer being the profit remaining due to the purchasing Company."

[fol. 286] I think it should be clear that this 10% commission is proposed not for the purpose of providing any element of profit but purely to reimburse the additional overhead expense incurred by the selling Company in discharging the additional clerical routine work involved over and above that which would be required in the simple operation under item "A".

Therefore, there can be, in my opinion, no legitimate objection to accepting these two definitions and applying the terms mentioned so as to oil the ordinary practical mechanics of the business.

If we are thrown back on item "A" only as the strict interpretation of the 1925 Agreement, we shall both be driven to deal with direct purchases from one Company to the other as prescribed, and written enquiries from customers in the territory of the other to be politely acknowledged and forwarded to the Company concerned, which will, in our joint opinion, be detrimental to the goodwill and standing of the business as a whole.

The second and third paragraphs of your letter of the 26th January in amplification of your letter of the 27th October last, raise an entirely new phase of future possibilities. As I understand the proposition, it is to the effect that both Companies should be enabled and encouraged to follow up, provide specifications and engineer jobs, whose ultimate destination is in the territory of the other Company. To quote your letter:

> " . . . to recognise specifying work of one company where the ultimate destination is the territory of the other Holophane company."
>
> " . . . to follow through a prospect for your territory where the consulting engineer has headquarters in Chicago or New York."
>
> " . . . if the consulting engineer is to be the decisive factor . . ."
>
> " . . . that if we do not make some special provision those orders will never develop and one or the other Holophane company will suffer."

[fol. 287] As you know, I am the last to cramp the international flavour of the Holophane organisations and do

not want to crab any constructive suggestion of this kind. Also, there is another side to this question, for instance, you cannot afford, any more than we can, to slight the Consulting Engineers, Architects, etc. with whom you or we may be in touch in the ordinary course of business if they happen to have a foreign job on hand. As an example, we know of an Architect in Bristol who will have the building of an important hospital in Trinidad which was held up because of the war, and we anticipate being called in when the scheme is re-opened. Naturally, he will expect us to service him on the layout—if we do not, he will have no difficulty in getting someone else.

So to cover the situation you envisage, I would agree to add item "C" to my letter of the 29th December last, to read as follows:

> "Supplies on the instructions and the responsibility of the purchasing Company shipped *direct* and *invoiced* by the selling Company as a result of direct and definite specification and engineering work of that Company applied to the particular order in question, to a customer into the territory of the purchasing Company, to be paid for at Factory cost plus 30% at place of manufacture (plus any actual disbursements incurred in shipping, etc.) plus a further 20% of the invoiced price to such customer and the balance as between the sum of the above and the selling price to the customer being the profit remaining due to the purchasing Company."

Again, the commission, which is increased from 10% to 20%, is not for the purpose of further profit but to compensate the selling Company for any work involving the services of their selling and engineering staff additional to the work involved over and above the transactions which would come under item "B".

I have been very circumspect in drafting the three conditions covering the three different categories so as to pass them to our Assistants to carry out, as neither you nor I would want to be troubled with routine matters, and if you [fol. 288] agree, I suggest they should be put on record,

being, in my humble judgment, a fair and proper reciprocal arrangement and reasonable return for any additional labour involved, as I am only concerned with the mutual welfare of our two Companies by retaining the spirit and substance of the 1925 Agreement.

Yours sincerely, Guy Campbell.

[fol. 289] GOVERNMENT'S EXHIBIT 26

(Airmail).

July 1, 1948.

Mr. Guy Campbell, Managing Director,
Holophane Limited,
Elverton Street,
Vincent Square,
London S. W. 1, England.

Dear Guy:

We are confronted from time to time by inquiries originating from American companies on lighting requirements to be used in some of their foreign subsidiaries. I assume that, likewise, you get requests for catalogs, quotations, etc., from English concerns who may have subsidiaries in the territories of one of the Holophane Companies other than yourself.

Our experience has been that when we tell such headquarters that they have to communicate with an English or French Holophane Company that they just lose all interest and substitute something else, which is only natural because they do not wish to be dictated where to buy.

In many cases it is necessary for our field engineers to work with the engineers of the headquarter company for a specification on certain Holophane types and there again we might have (and so might you) special types to suggest that the other Holophane Company does not produce.

Now in our existing trading agreement provision is made whereby when inquiries are received by one Holophane Company from a territory belonging to another

Holophane Company, that they should be referred to that Company under whose jurisdiction the particular country lies from where the inquiry emanates. However, this agreement does not provide for cases as specified early in the letter, where the inquiry comes from within the country of one Holophone Company where the buyer is in that same country, usually being the headquarters of the subsidiary, and where in most cases a transfer to another Holophane Company covering the territory of the ultimate destination is not acceptable.

[fol. 290] It would seem to me the easiest solution that such home inquiries either obtained or worked up by the respective Holophane Company should be handled straight through by that same Company regardless as to destination if it deals with requirements for a subsidiary or an affiliate company where the headquarters have jurisdiction; and if that is acceptable, then ten per cent straight commission should be paid by the Holophane Company taking the business to the Holophane Company in whose territory the ultimate destination falls.

I would like to have your reaction to this at your earliest convenience.

Best personal regards.

Sincerely, —— ——.

Chas. Franck: dl.

[fol. 291] GOVERNMENT'S EXHIBIT 27

HOLOPHANE LIMITED

Scientific Illumination Experts

Elverton Street, Vincent Square, London S-W-1
Works Gateshead

Telegrams: Holophane Sowest, London
Telephone: Victoria 8062 (4 Lines)
Our Ref. GC/LOM Your ref. ——

9th July, 1948.

Chas. Franck, Esq.,
The Holophane Co., Inc.,
342 Madison Avenue,
New York 17, N. Y., U. S. A.

Dear Charlie,

In reply to your letter of July 1st, I would not, for a number of reasons, be able to recommend to our Directors an arrangement of the kind suggested.

For instance, we (and you, i.e Canada, etc.) have contractual arrangements in our various territories which make any such freedom of action such as you propose quite impossible. Further, for obvious reasons, it might lead to difficulties not only in export territories but in our respective home markets as well.

The special circumstances mentioned in your letter to hand were provided for, so far as was both agreeable and practical, by the arrangements covered in your letter of the 11th June, 1945, which was duly submitted to and approved by our Board of Directors (see my letter 4th July, 1945).

On consideration, I think you will appreciate the commercial difficulties mentioned above, and also would say in passing, I am not at all sure that there might not be some possibility, unless careful steps were taken to avoid [fol. 292] same, in due time of legal complications, and taken altogether, I am not in favour of the proposal.

Yours sincerely, Guy Campbell.

[fol. 293] GOVERNMENT'S EXHIBIT 28

July 27, 1948.

Mr. Guy Campbell,
Holophane, Limited,
Elverton Street,
Vincent Square,
London, S. W. 1, England.

Dear Guy:

Yours of the 9th of July and your unfavorable reaction therein to mine of the 1st.

I was fully aware when writing of our agreement of June 11, 1945. Times and conditions have changed considerably since and what I suggested in a general way was meant for the benefit of Holophane, world-wide.

Would you mind explaining to me what you exactly mean when stating in your last paragraph that "there might be some possibility, unless careful steps were taken to avoid same, in due time of *legal complications*"?

Yours sincerely, Holophane Company, Inc., ——
——, President.

Chas. Franck: DL.

[fol. 294] GOVERNMENT'S EXHIBIT 29

Sea Mail.

GC/LOM.

9th August, 1948.

Chas. Franck, Esq.,
The Holophane Co., Inc.,
342 Madison Avenue,
New York 17, N. Y., U. S. A.

Dear Charlie,

Replying to yours of the 27th July last, would say the question of maintaining the validity of our Trade Mark rights might arise.

For instance, take *any* country and, say, it became the practice for goods bearing the same Trade Mark to be

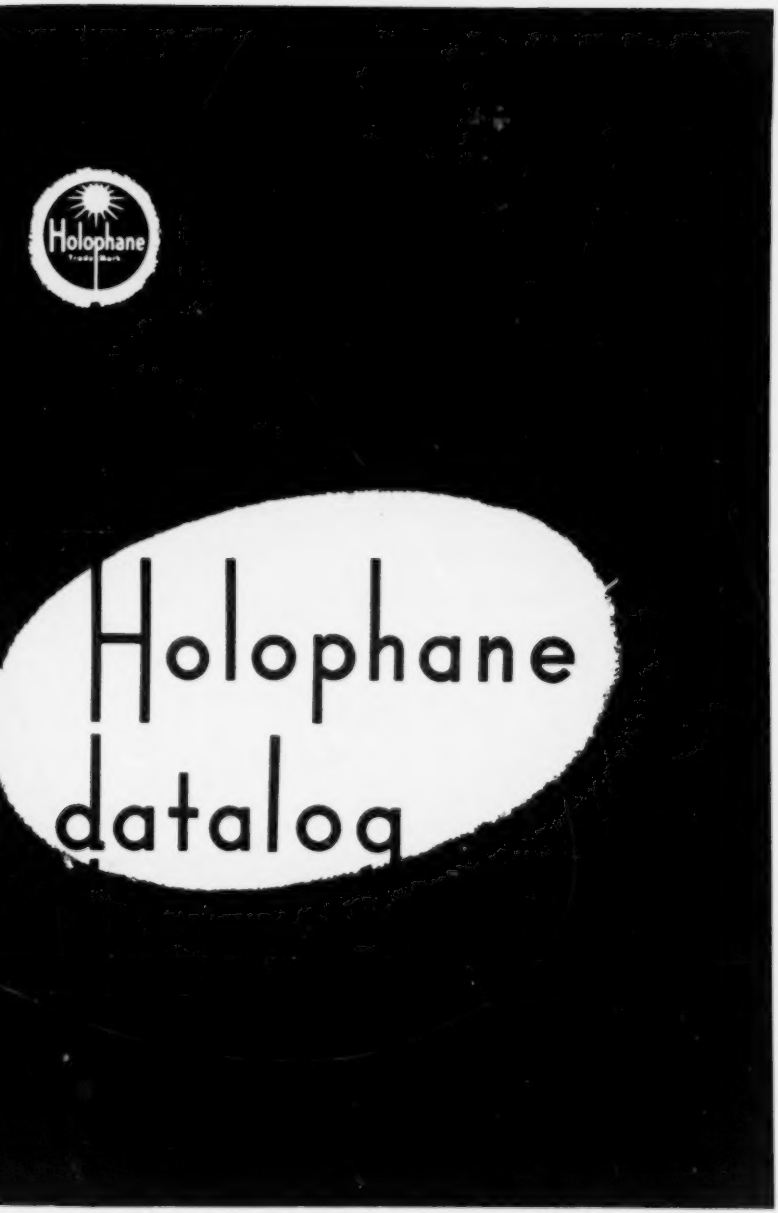
sold and invoiced by three distinct and separate Companies and some outsiders, particularly a local firm, started using the Mark, it might be a good defence for doing so to allege the Mark was invalid because it no longer indicated *to the buyers in that country* the products of *the registered owner* of the Mark in question, etc.

It is possible to legalise the position in *certain* countries by "licensing" and being made "registered Users" but there are *many other countries* where there is no provision in their laws for such an arrangement. In any event, I do not see the justification of legal expense, doubts and trouble involved and often one problem brings up another.

I am against departing from the inter-company Agreement of 1926 (with the agreed modifications), which has served so well all these years.

Yours sincerely, —— ——.

Government's Exhibit 30



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Index of Uses

Pages 40 and 41 give detailed information to assist in selecting recommended lighting units for any application

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Catalog No. D-47 Printed in U.S.A.

HOLOPHANE COMPANY INC., 342 MADISON AVE., NEW YORK 17, N.Y.
FACTORY: NEWARK, OHIO TORONTO

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Catalog No. D-47 Printed in U.S.A.

2223

FOREWORD

In offering this latest issue of the Datalog, the Holophane Company feels that it is an opportune time to re-state the policy to which it has adhered for a period of over fifty years. Starting with early light sources, such as the gas mantle and the carbon lamp, and progressing through the various forms of incandescent filament constructions into gaseous tube applications, our basic endeavor has been to provide the most efficient means of light control possible. We are proud that our efforts have resulted in the true economy of maximum illumination and improved seeing conditions from whatever light source was available.

With the years has come knowledge, based on experience, that enables our engineers to solve new problems in design and to accurately predict, while the unit is still on the drafting board, what the final performance will be. This has resulted in numerous unusual lighting units—known to us as "Specifics"—whose performance for their designated use cannot be matched by any other equipment on the market.

Fluorescent Developments

This experience stood us in good stead when we approached the matter of designing for the fluorescent lamp. Contrary to the common opinion that it was useless to try to control the light from this lamp, the action of the new Controlens results in the same efficient redirection of light effected in incandescent lighting. Again, the wasteful light from the bare lamp in the high-angle zone is bent down into an intensive pattern—with the result that glare is reduced and the useful light increased.

The fluorescent lighting units, shown on the succeeding pages, are just an indication of what we have in mind for the future. It will be worth your while to analyze the lighting effects and results mentioned in the descriptive texts. We believe that we have brought something to the application of the fluorescent lamp which has, heretofore, been lacking. We propose to continue to expand this "Holoflux" line just as we have others in the past.

Our Control Medium

It has been our good fortune that the material in which we work is such an incomparable medium as glass; a substance which can be produced crystal clear and remains impervious to the ravages of heat, dampness and abrasion; which can be so molded as to incorporate infinite combinations of optical prisms and thus take advantage of the indestructible physical laws of reflection and refraction.

Our general method of approach to the subject of lighting continues to be that of consideration of the entire lighting picture; the "surround" as well as the illumination. We feel that the distribution of light in the field of view is just as important as footcandles on the task. Our engineers have analyzed "lighting in nature" to determine the patterns of light to which the eye has become adapted throughout the ages. Thousands of light values of the outdoor scene have been measured and a safe comfortable pattern has been laid out, against which any artificial lighting system and its "surround" may be judged. This technique we have termed "ILLUMINEERING."

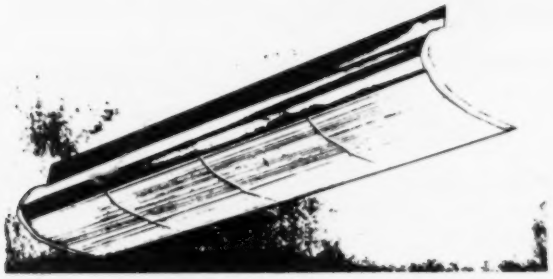
These investigations gave our engineers a working knowledge of all of the criteria involved so that they are able to predetermine the lighting and seeing results—in advance of the installation. Naturally, special attention must be paid to the source of the light since no such system can approach the ideal unless the luminaires first shape the light within definite limits. Holophane light controlling devices are designed to conform to such standards.

The engineering advice which we offered for years as an adjunct to the service of engineers and architects includes this matter of the balance of light in the field of view. Its consideration will help to make the picture complete; without it the lighting job is only half done.

Surface Mounted Holoflux for Attaching to Ceiling

(Underwriters Approved)

FLUORESCENT COMMERCIAL SURFACE ATTACHED



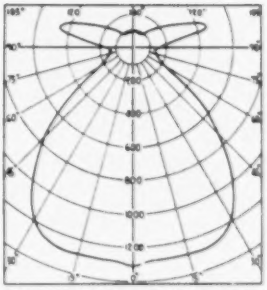
Surface Mounted Holoflux No. 9110–9111 (Patent Pending)

These surface mounted Holoflux units feature a new curved-type Controlens which works interchangeably with two or three 40 watt fluorescent lamps. They afford the ideal solution for installations where, either because of design considerations or ceiling job conditions, surface mounted units are favored over the "recessed" types. Holophane is proud to introduce this ceiling attached Holoflux line which embodies the best characteristics of the recessed units (page 4) with the added attraction of producing a substantial amount of ceiling illumination.

While its projection from the ceiling is only $8\frac{3}{8}$", this is sufficient to enable the top refracting element to spread a portion of the light widely across the ceiling to provide a luminous background to the unit. This helps to soften shadows and reduces the contrast of brightnesses within the field of view.

The Controlens is identical with that used in the recessed unit, and the upper member is a combination reflector, to work with the lens, and refractor to produce the ceiling illumination referred to.

Constructional features permit the unit to be used as a single fixture, or ganged together to produce extended lengths. Attachments are provided at the top so that if desired, the unit may be suspended on stems. This may be necessary in cases of extreme ceiling heights, or where sprinkler pipes, beams, or other obstructions prevent the installation of the unit tight against the ceiling.



Candlepower Distribution — No. 9111 across axis of lamps 3—40 w. F. lamps—6300 lumens.

All Holophane fluorescent units are wired

The units are available for either 2 or 3 lamps. Lamp holders are wired to the ballast and a length of wire is provided to reach from the ballast to the outlet box.

High power factor, 2 or 3 lamp, 110-125 volts, 60 cycles, ballast is standard.

Catalog Number	Lamp Wattage	Maximum Spacing	Dimen. Inches Lgth.	Width	Dpth.	Termination	Net Wt. Each Lbs.
9110	2-40 watt "F"	1.25	48 1/4	14 1/4	9 3/8	Channel support furnished with unit	58
9111	3-40 watt "F"						62

FLUORESCENT
COMMERCIAL

Holoflux Recessed 9100 Series

(Underwriters Approved)

Extended run (8 feet) consisting of two Holoflux unit-sections.

Fluorescent lighting has passed the bare lamp stage. Good modern practice shields the lamps — with actual increase of utilization efficiency. Best appearance is achieved through recessed (built-in) arrangements. Holoflux 9100 series units are suitable for all commercial applications.

A well known industrial designer created their outward appearance. Holophane engineers evolved the optical system; its basis is a new curved-type Controlens which works interchangeably with two or three lamps. Under any operating conditions, the prismatic glass lens will not warp or discolor; soap and water can restore its initial condition.

The Controlens produces these advantages; 1 — shields the lamp and reduces the glare; 2—confines the light in a useful and intensive pattern; 3—provides enclosure for low dust depreciation.

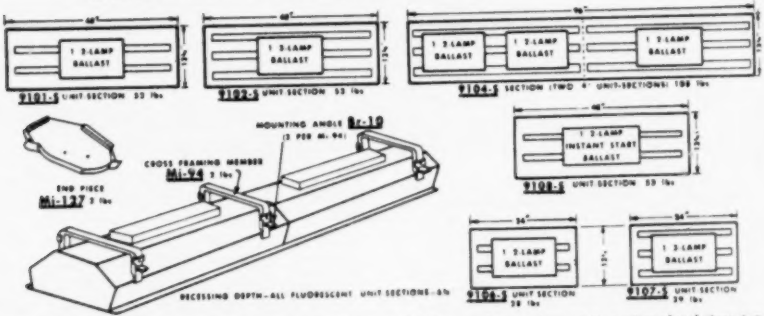
Units may be used singly or ganged together. Basic units are 4' (2' sections are available for filling in odd lengths).

These units permit mounting into various ceiling constructions. Mechanical accessories include provisions to compensate for irregular ceilings.

9104-S

The only latitude with fluorescent for future expansion of the system is to provide "empty" sockets. Accordingly, Holophane offers the #9104-S—a special 8' unit consisting of two 4' unit-sections ganged together. Used either as a single fixture or as part of an extended run, it becomes an additional unit length containing three two-lamp ballasts. A continuous line of light is maintained when one, two or three rows of lamps are switched on. Two rows of lamps may be used initially leaving space for future expansion.

HOW TO ORDER RECESSED HOLOFLUX FIXTURES: — *Use the table below. Note it comprises four basic elements: 1—unit-sections; 2—end pieces; 3—cross framing members; 4—mounting brackets.*



Where the layout calls for INDIVIDUAL 4' fixtures, specify: 1—one unit-section per fixture; 2—two end pieces per fixture; 3—two cross framing members per fixture; 4—two pairs of brackets per fixture. Each of these four items has its own catalog number. Price index gives the cost per item.

Where the layout calls for *RUNS* (unit-sections ganged together extending to any desired length) specify: 1—number of unit-sections by dividing length of run in feet by 4 — apply to all runs (they may vary in length) and total up to find the complete requirement; 2—number of end pieces two to each run; 3—cross framing members two to the first unit-section of any run and one to each additional unit-section completing the run*; 4 — mounting brackets one pair per cross framing member. Determine the cost per item in the price index and multiply by the total of each needed item to get the complete cost of the installation. All Holophane fluorescent filler sections are wired.

*Certain job conditions will require two cross framing members for each unit-section throughout the length of the run.

Holoflux in Combination With Incandescent Inserts

(Underwriters Approved)

FLUORESCENT COMBINED WITH INCANDESCENT

Photograph showing incandescent inserts used in conjunction with a run of Holoflux No. 9100 fluorescent unit sections.

The advent of the fluorescent lamp has complicated the display problem for many merchants because it introduces a totally different color characteristic than previously obtained. Many displays appear flat and unattractive under undiluted fluorescent lighting. The obvious answer is to add some incandescent lighting. Just what the mixture should be is often difficult for the display man to predetermine. Holophane's new line of equipment — Holoflux recessed fluorescent trough in combination with incandescent Controlens Units—provides a cut and try method of obtaining various mixtures—at the flick of a switch.

Candlepower Distribution
9101 (4' fluorescent section)
2—40w "F" lamps—
4200 lumens.

This is a "weighted" curve. *See page 25 for explanation.*

Application of Holoflux Combinations to Displays

Incandescent inserts are available in two forms:

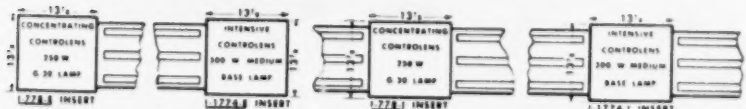
(1) An intensive Type Controlens Unit, similar in distribution to the standard F-1774 (page 14), which can be interspersed, on regular spacings, with the general fluorescent lighting. By means of separate controls, the warm tones of incandescent may thus be introduced in varying quantities to relieve the flatness and coldness of fluorescent lighting.

(2) A Concentrating Spot or Accent Light is provided for by the inclusion of the 1778 optical trim (page 12). The adjustable mechanical features permit the arranging of the display first and then applying the lighting for the best effect. Used with fluorescent for the general store lighting, this makes an ideal provision for high-lighting featured merchandise.

Either of these inserts may be located between the unit-sections (as intermediate inserts) or at the extremities of runs (end inserts). A reasonable spacing of the ±1774 type is one for every two unit-sections. The accent lighting inserts should be placed with relation to the probable location of special displays.

In either case, the component parts may be put together in a broad variety of combinations. Thus, they offer the user the greatest architectural adaptability, color control and display flexibility . . . ALL FUSED INTO A SMOOTH FLOWING DESIGN.

How to Specify and Order Holophane Combination Units



END INSERTS — INTERMEDIATE INSERTS

Figure the fluorescent portion from the table on page 4. Add to this the number of each type of incandescent insert. Each complete insert is identified by a single catalog number. (One caution — where a fluorescent filler abuts on an insert, no end piece (MI-127) is needed. Nos. I-778-E and I-778-I are wired. Nos. I-1774-E and I-1774-I are not wired.

227

COMMERCIAL DIRECT

Correctalite Close-Ceiling or Suspension Mounting

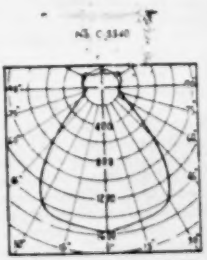
The Holophane Correctalite combines the effectiveness of direct lighting with the eye comfort of an indirect system.

Prismatic control directs light down on the work; there is sufficient upward light for pleasing ceiling illumination. Enclosed construction improves maintenance; easy cleaning restores the high original efficiency. Simple contour design prevents units from being soon outmoded.

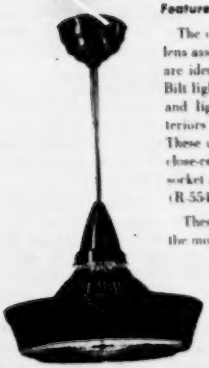
Features

The optical system consists of a prism wire reflector and lens assembly—with a flared skirt to aid in diffusion; these are identical with the optics that are used in modern In-Bilt lighting. In a word, Correctalite affords all the design and lighting advantages of Controlens lighting for interiors not structurally suited for recessed installations. These units are available in three types of mounting: 1—close-ceiling, (C-5340), 2—stem suspension with ball and socket alignment, (S-5340), 3—semi-recessed construction, (R-5544). See page 19.

These units may be spaced on centers up to 1¼ times the mounting height above the work plane.



Candlepower Distribution C or S-5340—300 w. medium base lamp—5900 lumens.



No. S-5340

Unit Catalog Number	Lamp Wattage	Distribution	Space Units on Centers Not Exceeding times the Mtg. Height	Dimen. Inches Diam.	Dim.	Termination	Net Wt. Each Unit
C-5340	200-300*	Intensive	1.33	15 3 8	12 13 16	Outlet Box Stem	13
S-5340	200-300*	Intensive	1.33	15 3 8	33 1 2	3 8 Hickey	16

* Medium base. 6 light center lamp.
Size of top of canopy—5 1 2" dia.
Under some job conditions the contractor may have to supply additional nipples and hickeys.

Wire is not furnished with these units.

Above at left: Typical suspension type Reflector-Refractor. Above at right: Typical ceiling type Reflector-Refractor. Curves show candlepower distribution of C-2132, (curve A), C-2133 (curve B)—both using 200 watt 3640 lumen lamp.

Reflector—Refractors . . . Close-Ceiling or Suspension Mounting

These semi-direct luminaires give effective illumination down on working areas with adequate ceiling light to avoid harsh contrasts. There is a minimum of light emitted at the glare angle (60° to 90°). Units are enclosed. Ordinary soap and water cleaning restores the original lighting efficiency. The unit (except C and S-2170) is easily relamped through a removable bottom cup. The appearance of the prismatic glass is pleasing both when lighted and cold.

Catalog Number	Lamp Wattage	Distribution	Maximum Spacing	Dimen. Inches Diam.	Dim.	Termination	Net Wt. Each Unit
CEILING TYPE UNITS—TYPE C (Relamped by removing bottom cup)							
C-2130	100*-150	Extensive	2.0	9 3 4	10 3 4		6
C-2132	200	Extensive	2.0	12	12 3 8	All have	9
C-2133	200	Intensive	1.25	12	12 3 8	outlet box	9
C-2140	300-500	Extensive	2.0	14	14 1 8	stem	12
C-2140-6"	300-500	Intensive	1.25	14	14 1 8		12
SUSPENSION TYPE UNITS—TYPE S (Relamped by removing bottom cup)							
S-2130	100*-150	Extensive	2.0	9 3 4	30 3 8		6
S-2132	200	Extensive	2.0	12	33	3 8"	9
S-2133	200	Intensive	1.25	12	33	female	9
S-2140-6"	300-500	Extensive	2.0	14	33 1 2	hickey	12
S-2140-6"	300-500	Intensive	1.25	14	33 1 2		12
RELAMPED BY REMOVING GLOBE (One piece unit)							
C-2170	100*-150	Extensive	2.0	9 7 8	11	—See Type C	6
S-2170	100*-150	Extensive	2.0	9 7 8	30 1 2—See Type S		6

Wire is not furnished with these units. *Use 1-3 8 socket extension for 100w. lamp.
Under some job conditions the contractor may have to supply additional nipples and hickeys.

Luminous Indirect for Silvered Bowl Lamp

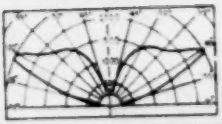
COMMERCIAL INDIRECT

At left: No. S-5640
Below: Candlepower Distribution No. S-5640 — 500 w. I.F. silvered bowl lamp—9550 lumens.

These units are ideal for the lighting of offices, classrooms and other locations where constant fine-detail work is performed. Maximum eye comfort is provided by the absence of shadows and the low brightness of the luminaires. Ceiling maintenance will keep the efficiency up to the initial values.

The only unit which effectively controls the light from the silvered-bowl lamp is this Holophane luminaire. Prismatic action in the outer skirt bends the light out at wide angles over the ceiling without spots, streaks or shadows. Scallops on the walls from the edge of the bowl are conspicuously missing. Graceful contour and excellent fixture design give the unit broad architectural adaptability.

The fixture has a typical stem suspension, with ball and socket aligner. The husk supports a crystal-glass fluted prismatic bowl by means of three rods terminating in the flattened portion. Interchangeable glass rings, fitting in the bottom opening, take care of the variation in lamp size and constitute the only difference between the two units. (300 w. size and 500 w. size).



Catalog Number	Lamp Wattage	Distribution	Maximum Spacing	Dimen. Diam.	Inches Dist.	Canopy Dia.	Termination	Net Wt. Each Lbs.
S-5630	300* I.F.	Inverted	14 feet	17 1/2	30 3/8	5 1/2"	3/8" Female Nickel	15 lbs.
S-5640	500* I.F.	Widespread	14 feet	17 1/2	30 3/8	5 1/2"		15 lbs.

* Mogul base, inside frost silver bowl lamp. Wire is not furnished with these units.
DOES NOT INCLUDE LAMP.
Under some job conditions, contractors may have to furnish additional hickeys and nipples.

Semi-Indirect—Filterlite

The FILTERLITE combines the utmost in beauty and eye comfort with the greatest possible lighting efficiency for semi-indirect lighting. Entirely luminous to avoid contrast with the ceiling. Low surface brightness. Minimum dust and dirt depreciation; easy cleaning restores original efficiency. Light on ceiling is spread wide and uniform, without streaks or shadows.

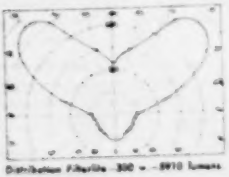
The unit is smooth outside and tightly enclosed. The upper portion is shaped so that a minimum of dust gathers on the surface. The lower section of the bottom piece is backed-up with a dense diffusing glass liner.

Units are available with either close-ceiling fitter (CF-200) or for suspension mounting (F-200).

Spacing Data

Ceiling Height	Distance Between Outlets	Hanging Length (Over All)
11'	8'	30"
	10'	33"
	12'	36"
12'	8'	33"
	10'	36"
	12'	39"
14'	10'	39"
	12'	42"
	14'	45"

For ceiling heights under 11' use ceiling type units. For ceilings over 11' the table at right will guide in determining the hanging height.



Distribution Filterlite—300 w.—8910 lumens

No. CF-200.

Catalog Number	Lamp Wattage	Distribution	Maximum Spacing	Dimen. Diam.	Inches Dist.	Canopy Dia.	Termination	Net Wt. Each Lbs.
CF-200	200-300*	Inverted Extensive	See Table	14	17 3/4	5 7/8"	Outlet Box Stem	17 lbs.
F-200				14	33 3/4	5 1/2"	3/8" Female Hickey	17 lbs.

*Medium base, 6" light center lamp. Wire is not furnished with these units.
Under some job conditions the contractor may have to supply additional nipples and hickeys.

No. F-200.

COMMERCIAL
SHOW WINDOWS

Show Window Reflectors
Recessed and Surface Types

Modern merchandisers know that the display must be well lighted if a show window is to attract the attention desired. This means high lighting levels, correct color value and proper distribution of the light.

Holophane incandescent show window reflectors produce these desired effects. They have the highest efficiency—which means that high illumination levels can be obtained; the crystal prismatic reflectors do not change the color of the light from the lamp—the color of light from the incandescent lamp gives the truest overall appearance to merchandise; the light control from this line of reflectors is exact—which means the light is properly distributed over the display and *within* the window area.

The choice of Holophane show window reflectors provides a broad selection of wattage and distributions to meet all window shapes—whether they be deep or shallow, high or low. Even island windows can be lighted and viewed from any angle without distracting glare from the light sources. ***These reflectors do not tarnish, deteriorate or peel.***

The Holophane line of show-window reflectors is summarized as follows:

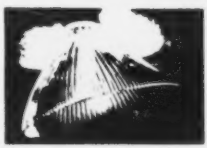
1. No. 983 is for surface mounting only. It is best used in small or medium sized average depth windows. No. 983 may be spaced on centers between 12" and 18" apart. With 150 watt lamps use a type "H" holder. 100 watt lamps can be used with the same holder by inserting a 1¾" socket extension; otherwise, use a form "O" holder. Holders and socket accessories are not furnished by the Holophane Company.

2. No. 915 is adaptable to either recessed or surface mounting. Its best application is in medium-sized average-depth windows. The closest spacing for the surface mounted unit is 11". The unit is complete with fitter No. 0945. When used in the recessed form, these reflectors may be spaced on minimum centers of 13¾". The finishing ring No. 0701 and plaster ring No. 0700 must be purchased separately.

3. No. 940 is for recessed mounting. It has a highly concentrating beam for shallow-depth and fairly high windows. Minimum spacing is 12¾". Unit is equipped with finishing ring, but plaster ring No. 0201 must be purchased separately.

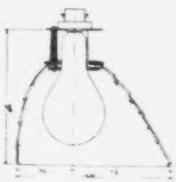
Catalog No.	Lamp Wattage	Dimen. Inches Diam.	Depth	Termination	Net Wt. Each Lb.
983*	100* 150	10 3 8	6 1 2	2 1 4" neck	2 lbs.
940*	150	12	7	2 1 4" neck	4 lbs.
915	300 300**	11	9 1 4	4" Outlet Box Canopy	6 lbs.
0700			Plaster ring for 915		
0701			Finishing ring for 915		
0201			Plaster ring for 940		

* Does not include socket. Wire is not furnished with these units.
*Use 1 3 8" socket extension with 100w lamp.
**Medium base 6" light center lamp.

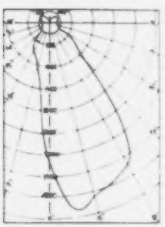


No. 983

Candlepower Distribution No. 983
150 w. lamp—2610 lumens

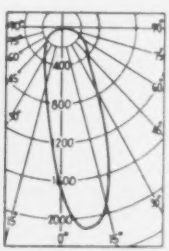


No. 915



Candlepower Distribution No. 915
300 w. lamps—5850 lumens

No. 940



Candlepower Distribution No. 940
150 w. lamp—2610 lumens

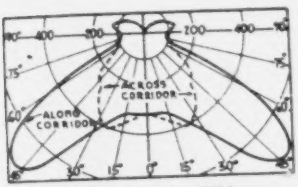
COMMERCIAL
SPECIAL PURPOSE

Corridor Lighting

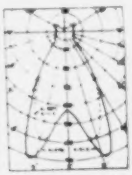
Holophane No. C-2172 is specifically designed for the lighting of corridors or similar long narrow traffic spaces. It delivers an asymmetrical light pattern; the light is widely spread along the length of the room and restricted across the width. The evident superiority for this particular application of the C-2172 over units spreading light equally in all directions, requires no lengthy argument. Units may be spaced as far apart as 2½ times the mounting height above floor.

Corridor Light No. C-2172

Bookstack Unit No. 02076



Distribution—C-2172—150 W. lamp—2600 lumens.



Candlepower Distribution—No. 02076—150 W. lamp—2305 lumens.

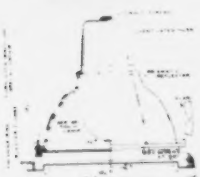
Bookstack Lighting

Holophane No. 02076 has an asymmetrical distribution which distinctly fits the peculiar nature of this lighting problem. The major portion of the light travels to the vertical surface of the bookstacks with only a small component in the aisle space. The result is even lighting from top to bottom of the stacks and along the stack.

Typical Nos. B-606, B-615

Small Reflectors for Bracket Suspension

Holophane reflectors Nos. B-606 and B-615 are general utility reflectors where the job calls for isolated units to be mounted on brackets. These units have an extensive light distribution and are for use with lamps ranging from 25 to 150 watts. Their smooth inside reflector surface is easily restored to original efficiency by using ordinary soap and water or washing compounds.



Recessed Lobay Units

Lobay units are adaptable for recessing. Arrangement consists of reflector with a cadmium plate steel finishing ring. (Cast plaster rings can be furnished on special order.)

Catalog No.	Lamp Wattage	Distribution	Spacing Units on Centers Not Exceeding times the Mtg. Height	Diameter Inches Diam.	Depth Inches Dph.	Termination	Net Wt. Each Lb.
C-2172	100* 150	Extensive	2.5	9-7/8	11	Outlet Box Stroop	8 lbs.
02076†	50-60	Intensive	1.0	8-5/8	8-5/8	Clamping Filter to Fit Grooved Socket	4 lbs.

*No socket furnished with 02076.
* Use 1-3/8 socket extension for 100 watt lamp.

B-606	25-40-60	Intensive	1.0	7	7 to stem	3/8" Female Hickey for attachment to stud box	2 lbs.
B-615	100*-150	Intensive	1.5	10	10 1/2 to stem		3 lbs.

*Use 1-3/8" socket extension for 100 watt lamp.

B-682	300+	Extensive	3.0				10 lbs.
B-683	to	Intensive	1.5	13-7/8	13-1/2		11 lbs.
B-686	500	Concentrating	0.75				11 lbs.
0914	Plaster ring		(To be ordered separately)				

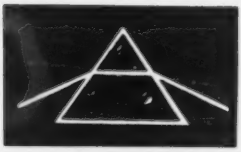
† Mogul base socket. Wire is not furnished with these units.

IN-BILT LIGHTING WITH HOLOPHANE CONTROLENSES

Fundamentals of Holophane Light Control

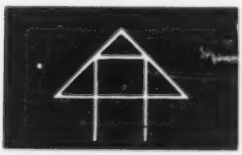
The effectiveness of a lighting system depends largely on how well the light from the source is controlled. Proper control eliminates wastage of light into areas where it is unnecessary or undesirable and prevents raw light from reaching the eye direct and producing glare.

The most exact means known to science for controlling the direction of light is the glass prism. When a ray of light enters or leaves a glass prism it is bent at an angle depending on the angle of the prism and the angle of striking the glass; something like this:—



There are definite physical laws which govern these angles of light ray bending (called refraction) well known to science and to Holophane lighting specialists. By varying the shape of the prism and the relation in position of this prism to the lamp filament, light can be directed in any desired direction. A combination of such prisms, incorporated into a Holophane Controlens, provides the most accurate means of projecting light into a predetermined area.

The prism can be made to bend the light ray so that it travels directly backward.



This is called "total reflection" and is the principle used in Holophane reflectors. These reflectors divert light from non-useful directions and add it to the rays which go directly into useful zones. Careful and precise engineering and manufacture enable Holophane to design prisms which will turn back more of the light rays than any other method.

Effective "Built-In" Lighting Made Possible Through the Use of Holophane Controlenses

The application of these principles, incorporated into the design of Holophane In-Bilt systems, has revolutionized the use of equipment for "built-in" lighting. While the idea of recessing lighting units in the ceiling or placing them behind skylights is not new, it was formerly so generally unsatisfactory that it never came into wide spread use. Despite the fact that the locating of units in the ceiling was correct in theory, from a practical standpoint it did not work out due to the inherent inefficiency of the usual diffusing screens, lack of control in the direction of the light rays, and the omission of proper provisions for keeping the inside of the housing and the top of the glass free from dust and dirt.

* * *

It was the development of the CONTROLENS which finally turned theory into fact. Replacing the diffusing glass with the CONTROLENS means that the light is no longer lost in the upper portion of the room but is refracted or bent downward into a definite predetermined pattern so as to fit the area or subject to be lighted. No longer does the large amount of light formerly emitted at high angles produce annoying glare; it is now joined to the downward light to increase the effective illumination—exactly where it is needed.

* * *

In Holophane IN-BILT systems there are numerous types of CONTROLENSES; each one is designed to be used in conjunction with a particular reflector. The CONTROLENSES which are used for the majority of applications fall broadly into three classes: 1. Symmetrical lenses producing various widths of beam. 2. Symmetrical lenses capable of projecting the light off to one side—commonly called "offset." 3. Asymmetric lenses (non-symmetrical) which spread the light wide on one axis and "squeeze" it narrow at right angles.

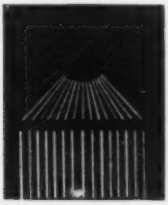
* * *

The three classifications above suggest the commonest uses of CONTROLENSES. **Actually, the combinations of optical arrangements and lighting effects which can be secured with prismatic CONTROLENS systems are practically inexhaustible.**

IN-BILT LIGHTING WITH HOLOPHANE CONTROLENSES

The following illustrations show, in a simplified form, some of the elementary actions of the Fresnel-type Controlens when refracting the rays from a symmetrical light source.

"Controlens" bends, or refracts, more light rays into a given area than would normally reach it. Illumination values are increased proportionally.



When area to be lighted is limited, change of focus narrows beam still more — with a further increase in illumination.

Moving light source to one side of Controlens axis directs beam to opposite side. Focus change still controls width of beam.

By combining all of the possible variations in focus and lamp offsets, an infinite number of divergences and asymmetry of beam are made available. Selection of the proper combination insures maximum illumination for any specific application. In general, this type of Controlens is used for the illumination of areas which are limited in extent, i.e., Localized-General Lighting. There is little reduction in the intensity of the individual ray by absorption in the glass, and that is more than compensated for by concentration of many rays into an area otherwise served by a few. The illumination level in any such area is raised in proportion to the number of additional rays redirected into it.

Unique Holophane "optical train" takes care of over 85% of modern In-bilt lighting applications.

For general lighting applications where a uniform illumination is required on spacings up to 1¼ times the mounting height, Holophane has developed a brand new Controlens of a double-action type, to be used in combination with a specially designed reflector. Although it has the general appearance of the Fresnel type, its optical principle is radically different. It has the property of being able to accept rays of light, at the same point on the lens, that approach from equally opposite directions—and to diverge them an equally opposite amount. The following diagram makes this clear—

A remarkable feature of these systems is that a *square* prismatic reflector cooperates with a *square* prismatic Controlens. This is a means toward the highly desirable end of completely uniform brightness over the entire surface of the Controlens. The performance of this double-action Controlens is unequaled by any lighting equipment available on the general commercial market. This design results in more luminous shadows, less glare in the high angles, and—for general lighting applications—will add 40% to the illumination produced by the Fresnel System.

SUMMARY
In-Bilt Lighting with Controlenses

The various advantages of a Holophane In-Bilt system can be summarized as follows:

1. Highest illumination values for any built-in system.

2. Greater visibility for any given lighting level due to better disposition of brightness in the field of view.

3. The initial and "average through life" results can be accurately predicted.

4. Glass surfaces are subject to no permanent depreciation. Ordinary washing compounds will restore them to initial efficiency.

5. Low cost per foot-candle per year because of better maintenance—due to enclosed construction.

6. Transmits the light unmodified and undistorted.

7. Adaptable to nearly all architectural styles. It is artificial lighting in the natural manner.

8. Controlenses are available for either incandescent or fluorescent lamps.

9. It is the last word in the application of science to lighting—making interiors appear clean, orderly and spacious.

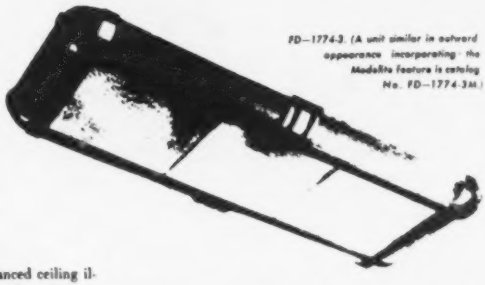
Because of the great variety and combinations of Holophane In-Bilt units, a word of caution should be inserted here, and attention called to the fact that the application of any such lighting unit—other than those mentioned for a specific purpose and instructions given—must receive study so that the proper light distribution is used. The service of Holophane Field Engineers, throughout the country, are available, or our Engineering Department in New York should be consulted, to specify the optical set-up which will produce the results desired. No obligation for this service.

IN-BILT DROP-TRIM WITH MODELITE

Decorative Drop-Trim —Modelite Feature Optional

(Underwriters Approved)

The Holophane Drop-Trim units are the ultimate development in In-Bilt Lighting. They combine the most advanced light control design involving Controlenses with the elegance of simple smooth contours, rich satin finish and luminous curved side panels.



FD—1774-3. (A unit similar in outward appearance incorporating the Modelite feature is catalog No. FD—1774-3M.)

These panels, providing a carefully balanced ceiling illumination as a matching background for the units, are held to a low brightness in the direction of the eye by the screening effect of the prismatic reflectors inside. The Controlenses and glass trims are supported by a one-piece cast satin aluminum trim which is secured directly to a #16 gauge steel rough box containing and protecting the optical system. This trim may be had in sizes to take one, two or three Controlenses in a line, or four arranged in a square.

In the case of multiple units, the lenses may be moved on top of adjacent ones for easy relamping. Single units have a hinged door with latch in which the Controlens is supported.

With any of these choices, the result is a unit which is ideally suited for modern interiors, has a low, comfortable side brightness and withall produces illumination on the merchandise or work in the most efficient manner.

MODELITE

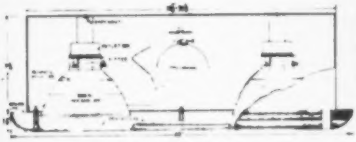
The application of spot lighting to feature items of merchandise has become standard practice with display managers. Until the advent of the Modelite, this consisted of attaching spot lights to the ceilings or columns—a generally unsightly procedure.

The Modelite is an In-Bilt Controlens lighting unit which makes it possible, for the first time, to spot light or "accent" merchandise display from a light source which is an integral part of the general lighting system. The result is unique in that the display is flooded with light without any distracting brightness of the source from which it comes.

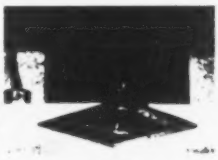
How Modelite Operates

The Modelite consists of a compound focusing Controlens, designed for use with a 250 watt flood light lamp, in conjunction with a polished aluminum reflector. The reflector and socket are manually adjustable by shifting a sliding yoke to which they are attached. A clamping support, through which the yoke slides, is pivoted so that the whole device may be rotated as a unit. This mechanism permits the beam to be revolved 360° and offset 35° from the vertical. The procedure is to have the lamp lighted and to actually focus the beam on the merchandise. A turn of a thumb screw locks the mechanism in the required position.

No. FD-1778-M or FD-1774



Sectional View No. FD-1774-3M.



No. F-1778-M

IN-BILT DROP-TRIM WITH MODELITE

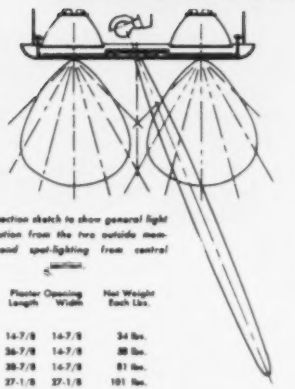
Modelite Adaptations

The Modelite may be used as an individual unit, in which case it is housed in its own #16 gauge steel rough box, with either a flush-ceiling or a drop-type trim.

More often it is used in the place of one of the optics, usually the center one, of the multiple lens system in the Drop-Trim unit, discussed on the preceding page.

Flush Constructions

In a similar manner, it can be used in a multiple unit having a face plate flush with the ceiling. These flush units have a #16 gauge steel rough box to which the face plate is attached. This plate is finished bakolescent silver enamel on the outside. In the case of single units, secured by two concealed hinges and screws, it acts as the door. In multiple units, the lenses may be slid one on top of the other for easy access.



Cross section sketch to show general light distribution from the two outside members and spot-lighting from central section.

Key to Catalog Numbering: — Drop-Trim units have prefix—PD. Flush units have prefix—F, units incorporating Modelite have suffix—M.

Unit Catalog Number	No. of Lenses Con't Lighting	Modelite	Maximum Watts Per Lens	Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Weight Each Lbs.
DROP TRIM UNIT WITH MODELITE											
PD-1778-M	—	1	General lighting 300 watt Medium base lamp. PS-35 6" light center (G-30) Modelite—200 watt Reconditioning lamp.	14-5/8	14-5/8	12	19-5/8	19-5/8	14-7/8	14-7/8	34 lbs.
PD-1774-2M	1	1		26-5/8	14-5/8	12	31	19	26-7/8	14-7/8	58 lbs.
PD-1774-3M	2	1		38-5/8	14-5/8	12	43	19	38-7/8	14-7/8	81 lbs.
PD-1774-4Mm	3	1		26-7/8	26-7/8	12	31-1/4	31-1/4	27-1/8	27-1/8	101 lbs.
FLUSH TRIM UNIT WITH MODELITE											
F-1778-M	—	1		14-5/8	14-5/8	13-7/8	13-3/8	13-3/8	14-7/8	14-7/8	33 lbs.
F-1774-2M	1	1		26-5/8	14-5/8	13-7/8	27-3/8	13-3/8	26-7/8	14-7/8	60 lbs.
F-1774-3M	2	1		38-5/8	14-5/8	13-7/8	39-3/8	13-3/8	38-7/8	14-7/8	93 lbs.
F-1774-4Mm	3	1		26-7/8	26-7/8	13-7/8	27-5/8	27-5/8	27-1/8	27-1/8	115 lbs.
PD-1774	1	—	300 watt PS-35 lamp.	**DROP TRIM UNIT WITHOUT MODELITE**							
PD-1774-2	2	—		**DIMENSIONS SAME AS DROP-TRIM UNIT WITH MODELITE**							
PD-1774-3	3	—									
PD-1774-4S	4	—									

NOTE—On all Drop-Trim units the trim projects 3/16" down from the ceiling line.

Plaster rings are not furnished with these units. Single lens units are supplied unwired. Multiple lens units are internally wired.

Simple Smart Design Suitable for Modern Store Interiors. For Either Flush or Surface Mounting.

IN-BILT COUNTERLITE

The name COUNTERLITE indicates the chief application of this precision lighting unit—the lighting of store counters. Centered over the customers edge, it projects an oval pattern of light—narrow across and spread along the counter. In this way, the majority of the light is concentrated on the display—resulting in higher illumination and greater attraction. Spill light takes care of traffic aisles and stock shelves.

These units are available for either recessed or surface mounting. The optical parts—a compound Controlens and a polished aluminum reflector—are supported by a #16 gauge steel back box. In the case of the surface type, the standard external finish is grey baked enamel which serves as a prime coat if the unit is to be painted in with the ceiling. For use with either 200 or 300 watt medium base lamp.

No. F-1814

No. F-1814

Unit Catalog Number	No. of Lenses	Maximum Watts Per Lens	Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Weight Each Lbs.
F-1814	1	300-300*	13-3/4	13-3/4	7** 9 7/8†	13-3/8	13-3/8	14	14	27 lbs.
F-1814	1	200-300*	14-1/2	14-1/2	8-3/4	THIS IS A SURFACE MOUNTED UNIT				24 lbs.

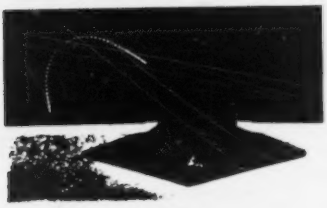
**Recessed depth 7" †Overall depth—9 7/8" *Medium base—6" light center lamp.

Wire is not furnished with these units. Plaster ring is not furnished.

IN-BILT FLUSH SINGLE UNITS

Controlens Units — Intensive Distribution

(Underwriters Approved)



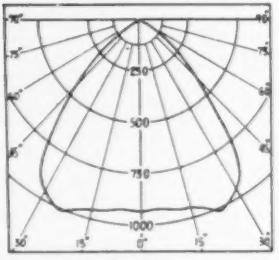
No. F-1774

Applications

These units, being *built-in*, become an integral part of the building interior: they blend with most architectural designs. In most cases F-1774 type units are used in a "general" lighting layout; lighting is evenly spread over the room area when the units are uniformly spaced. (To secure this even coverage, the units should be installed at spacings of not greater than 1¼ times the mounting height above the work plane.) This type of lighting is used in STORES, OFFICES, BANKS, SCHOOLS, CHURCHES, HOSPITALS, STUDIOS, PUBLIC BUILDINGS, etc.

Performance

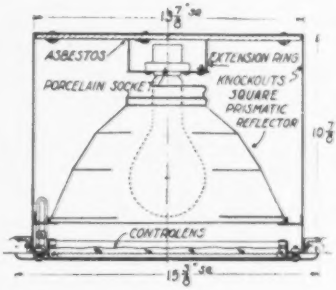
The F-1774 series provides an intensive light distribution by means of the optical "train" consisting of a Controlens and a square prismatic reflector. The action of this combination in controlling the light is shown below and described more fully on page 11.



Candlepower Distribution F-1774—200 w. lamp—3640 lumens.

At any normal angle of view the lighted fixture causes no discomfort, because the amount of light at high angles is negligible. Lighted or cold the appearance of the unit flushed into the ceiling is pleasing. The light is the same color as that emitted by the lamp since clear prismatic glass does not distort the color of the light transmitted by it. Performance is high between cleaning intervals because of the dirt-resisting construction of the unit and its location up in the ceiling. The prismatic crystal glass suffers no permanent depreciation.

Installation is made by framing the ceiling opening with either angle iron or wood framing. The roughing box should be screwed to the frame so that the bottom edge will be flush with the ceiling line. Asbestos-covered fixture wire (type A F) should be brought through at least four feet of Greenfield from the unit to an outlet box; the outlet box should be at least one foot away from the unit. After electrical connections have been made and the reflector installed, the face plate is attached to the box, the Controlens is installed as marked with prism side out.

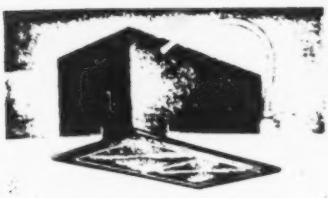


Sectional View F-1774.

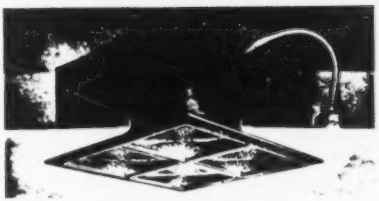
F-1774 Series — Intensive Distribution

(Underwriters Approved)

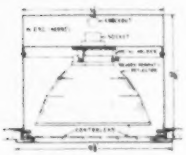
IN-BILT FLUSH MULTIPLE UNITS



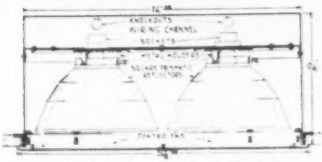
No. F-1774-2, Typical for multiple units.



No. F-1774-4S, Square multiple unit.



Sectional View through width—multiple units.



Sectional View through center of No. F-1774-4S—square multiple unit.

Mechanical Description

These units are designed for flush recessed installation in the ceiling. They are available either as single units or in any one of a variety of multiple units (two-in line, three-in-line, four-square.) Each individual optical "train" consists of a 12" square prismatic Controlens working with an 11½" square prismatic reflector. Optical elements are assembled and housed in a roughing box of #16 gauge steel, finished white enamel inside, grey baked enamel outside.

In the single lens units, a #16 gauge steel face plate, finished Bakolescent silver, is fastened to the roughing box by two concealed hinges and captive screws. The Controlens is held in a guide on the face plate by two spring fingers. In multiple lens units, the Controlenses rest in the frames so that each may be freely slid on top of the adjoining lens in order to service the unit.

Holophane F-1748

This unit is similar in performance, appearance, and mechanical design to the F-1774 unit. It differs only in respect to overall size and wattage capacity. F-1748 is for use with a 150 watt lamp maximum, and its optical train consists of a 8½" square prismatic reflector and 8½" Controlens.

Unit Catalog Number	Number of Lenses	Max. Watts Per Lens	Dimensions in Inches: Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Wgt. Each Lbs.
F-1774	1	300*	13-3/4	13-3/4	10-7/8	15-3/8	15-3/8	14	14	30 lbs.
F-1774-2	2 in line	300*	25-3/4	13-7/8	12-1/16	27-3/8	13-3/8	26	14-1/8	58 lbs.
F-1774-3	3 in line	300*	37-7/8	13-7/8	12-1/16	39-3/8	15-3/8	38-1/8	14-1/8	83 lbs.
F-1774-4S	4 square	300*	26	26	12-1/16	26-7/8	26-7/8	26-1/4	26-1/4	102 lbs.
F-1748	1	150	10-1/8	10-1/8	8-7/8	11-3/4	11-3/4	10-3/8	10-3/8	17 lbs.

* Medium base—6" light center lamp.

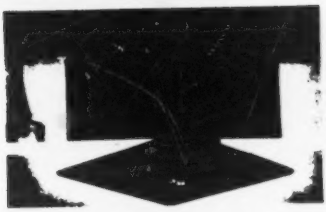
Single are units are supplied unwired; multiple units are internally wired.

Plaster rings are not furnished with these units.

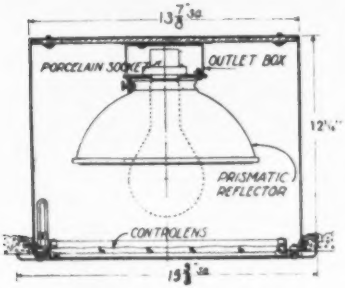
IN-BILT FLUSH FOCUSING

Controlens Units — F-1765 Series

(Underwriters Approved)



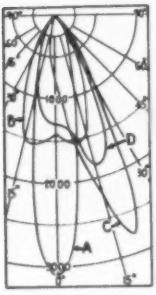
No. F-1765. Mounted Flush in the ceiling.



Sectional View F-1765

Halophane No. F-1739

This unit is similar in performance, appearance and mechanical design to the F-1765 unit. It differs only in respect to over-all size and wattage capacity. F-1739 is for use with 150 watt lamp maximum and uses an 8½" square prismatic Controlens.



Candlepower Distribution No. F-1765 with 200 W. 3640 lumen lamp. Unit may be arranged to provide any of the four light patterns shown, or intermediary distributions.

Application

These In-Bilt units are used for three types of lighting:

GENERAL LIGHTING: in narrow, high ceilinged interiors as may occur in some STORES, CHURCHES, BANKS, GYMNASIUMS, MUSEUMS—where not more than two rows of outlets are used. For uniform illumination, these units should be installed on centers not exceeding 0.9 times the mounting height above the working plane.

LOCAL LIGHTING: where the light is focused on PEOPLE, OBJECTS, WORK AREAS, DISPLAYS—as might occur with STORE COUNTERS, STAGE PRODUCTIONS, INSPECTION OPERATIONS, LABORATORIES, CHURCH PULPITS.

GENERAL-PLUS-LOCAL-LIGHTING: where focusing beams are used to supplement existing installations by combination with the "general" system in use.

In this manner, F-1765 In-Bilt units accentuate certain limited areas where emphasis is called for. This technique suggests an opportunity for combining Incandescent punch lighting with general Fluorescent lighting.

Performance

The F-1765 series consists of a Controlens and prismatic reflector combination, outwardly similar to the F-1774 series but actually have a very different set of control characteristics. A variety of light patterns is possible ranging from curve "A" through curves "B", "C", and "D" as illustrated in the distribution curves below at left. (Curve "B" however, is the standard setting for units listed here.) For other degrees of beam spread and "throw", the lamp focus and off-set will be set at the factory according to the requirements of the job.

Installation and Mechanical Description

(See descriptions page 15 of F-1774 series for all essential information. NOTE: F-1765 uses a round reflector. Dimensional data can be secured from table at the bottom of this page.)

Unit Catalog Number	No. of Lamps	Max. Watts Per Lamp	Dimensions in Inches: Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Wgt. Each Unit
F-1765	1	300*	13-3/4	13-3/4	12-1/16**	15-3/8	15-3/8	14	14	26 lbs.
F-1765-3	3 in line	300*	33-3/4	13-7/8	12-1/16	37-3/8	15-3/8	36	14-1/8	80 lbs.
F-1765-3	3 in line	300*	37-7/8	13-7/8	12-1/16	39-3/8	15-3/8	38-1/8	14-1/8	72 lbs.
F-1765-45	4 square	300*	36	36	12-1/16	36-7/8	36-7/8	36-1/4	36-1/4	86 lbs.
F-1739	1	150	10-1/8	10-1/8	11-1/16**	11-3/4	11-3/4	10-3/8	10-3/8	13 lbs.

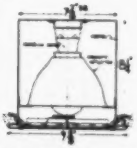
* Medium Base—6" Light Center Lamp. Plaster rings not furnished.
** Depth necessary for settings "A" and "C". Otherwise F-1765 is 10½" deep. F-1739 is 8½" deep.
Single lens units are furnished unwired, multiple units are furnished internally wired.

Small Controlens Units for Local Lighting

(Underwriters Approved)

IN-BILT SMALL SPECIAL PURPOSE

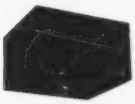
No. F-1732



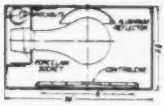
Section through No. F-1732

Numbers F-1722, F-1732, E-732 are usually used for local lighting in HOMES, STORES, OFFICES, INSTITUTIONS, etc. When used in general lighting lay-outs, space these units on centers not greater than 0.75 times the mounting height. In general, these units consist of a prismatic reflector (E-732 polished metal reflector) in optical combination with a prismatic Controlens. The lighting elements are housed and assembled in a 16 gauge steel roughing box. (See table below for dimensional details.)

No. F-1732—100 w. 1580 lumens.



No. E-732



Section through No. E-732

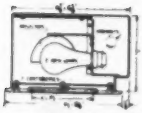
Unit Catalog Number	Number of Lamps	Max. Watts Per Lamp	Dimensions in Inches: Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Wgt. Each Unit
F-1722	1	60	7-3/4	5-1/4	6-3/8	8-7/8	6-3/8	8	5-1/2	6 lbs.
F-1732	1	100	7-7/8	7-7/8	5-1/4	9-3/8	9-3/8	8-1/8	8-1/8	10 lbs.
E-732	1	100	9-1/2	8-3/8	8-1/2	THIS IS A SURFACE MOUNTED UNIT				6 lbs.

NOTE: Dimensions are approximate. Write for detailed sketch before making installation. Wire is not furnished with these units.

Controlens Units For Vertical Surface Lighting

(Underwriters Approved)

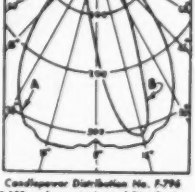
F-796-2



Section through No. F-796-2

These Controlens units are made for Flush or *Surface* mounting: They are designed to light blackboards, bulletin boards, switchboard panels and similar vertical surfaces. Recently they have been used extensively in canopies attached directly to the panel itself. Generally, the 796 type is used as separate units in intermittent runs, also for use with long blackboards.

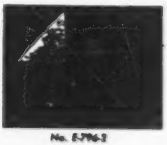
The 790 type is for use with continuous troughs or where a blackboard is isolated or narrow.



Candlepower Distribution No. F-796 1-100 w. lamp. A—Lateral Distribution along surface. B—Vertical Distribution toward surface.

The requirement for lighting a vertical surface is to bend the light beam toward the surface and then spread it out along the wall. The light should be directed to the surface at a sharp angle so as to cut out "specular" reflection at normal viewing angles.

Apart from small mechanical and fine optical differences between the several units, the basic construction is as follows: they consist of a Controlens and polished aluminum reflector. These elements are housed either in a roughing box with face plate for *Flush* mounting or in a one piece box for *Surface* mounting. Units may contain one or two optical setups; number will be determined by the amount of light needed to do the job.

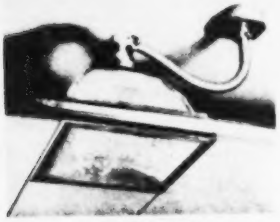


No. F-796-2

Unit Catalog Number	No. of Lamps	Max. Watts Per Lamp	Dimensions in Inches: Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Wgt. Each Unit
F-796	1	100	8	8	6	9-3/8	9-3/8	8-1/4	8-1/4	9 lbs.
F-796-2	2	100	14-3/8	11-3/8	7	15	11-1/2	14-7/8	10-1/4	19 lbs.
E-790	1	100	8-3/8	9-1/2	5-7/16	THESE UNITS ARE SURFACE MOUNTED				6 lbs.
E-790-2	2	100	15	9-1/2	5-7/8					10 lbs.

NOTE: Mechanical and dimensional details for F-796, F-796-2, E-790 and E-790-2, are identical with those for the 796 type shown. Single lens units are supplied unwired. Multiple lens units are internally wired.

IN-BILT SQUARE "NO BOX"



Nos. R-2772, R-2773

These No-Box units are designed for installation without a metal housing, which results in considerable over-all economies. Efficient lighting performance between cleaning intervals is maintained because of the enclosed construction.

The R-1774 and the R-1748 have a ceiling flange similar to the F-1774 series, and present the same external appearance. **Units include plaster rings.**

Special Designs for Acoustical-Type Ceilings

The R-2772 and the R-2773 are designed for tile or block ceilings and being 12" square will exactly replace a single tile. The R-2772 will fit any standard block construction, such as Celotex, and may be attached directly to the ceiling framing by means of a metal frame supplied with the unit. The R-2773 was especially designed for attachment to the "T" bar construction used with Johns-Manville Sanacoustic tile ceilings.

The mechanical design of these units features a square Controlens in optical combination with a square prismatic reflector. All these units have an intensive light distribution and are used mainly for "general" lighting. Spacings up to 1¼ times the mounting height above the work plane will deliver a uniform degree of illumination throughout the room.

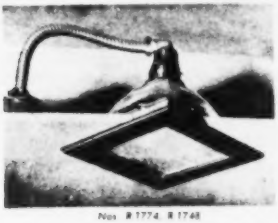
Unit Catalog Number	Approximate Watts Per Lamp	Dimensions in Inches Recessing Depth	Face Plate	Net Weight Each Unit
R-1774	300-500*	11 5/8	18 3/8 Sq.	17 lbs.
R-1748	150	9 7/8	11 5/8 x 5/8 Sq.	9 lbs.
R-2773	200-300*	13 1/8	12 Sq.	14 lbs.
R-2772	200-300*	13 1/8	12 Sq.	13 lbs.

*Medium base—6" light center lamp. Wire is not furnished with these units.

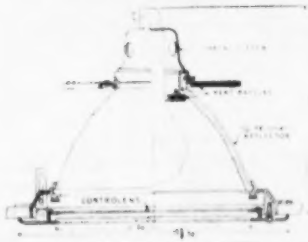
Controlens Units — Intensive Distribution

(Underwriters Approved)

No-Box Construction—R-2772 and R-1774 Types



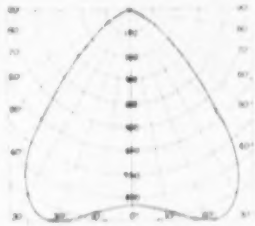
Nos. R-1774, R-1748



Sectional View Holophane No. R-1774

Application

Like all flush mounting In-Bilt units using Holophane Controlens, these two types are suitable for lighting installations which are an integral part of the building construction and which by the same token, blend naturally with the interior design.



Candlepower Distribution No. R-1774
300 W. lamp—3780 lumens.

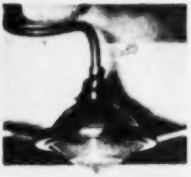
Controlens Units
Flush and Semi-recessed
(Underwriters Approved)

IN BILT ROUND NO BOX

No. R-1894

No. R-5544

No. R-2476



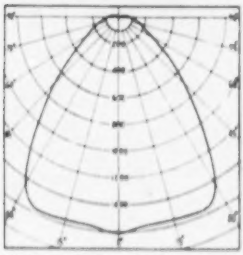
No. R-2120

R-1894: This flush unit, with round Controlens, is used for general lighting applications. It has been designed for installation without metal housing, which results in considerable over-all economies. Its round contour makes it suitable for certain architectural requirements. High lighting performance between cleaning intervals is assured because of the enclosed construction.

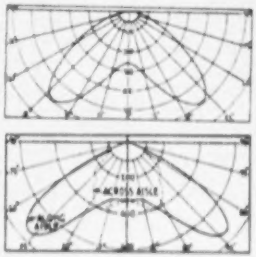
No. R-5544 (In-Bilt Correctalite) and R-2120 series (Reflector-Refractor): These units combine excellent design characteristics with high lighting efficiency. Both types embody semi-recessed design, with the light-controlling glassware projecting below the ceiling so as to provide some ceiling illumination. They are easily relamped through a removable prismatic bottom plate.

R-2470 is similar to R-2120 but is serviced by unthreading the glassware from a screw neck fitter. It has a symmetric distribution. Its asymmetric counter-parts are the R-2472 with an oval distribution — suitable for corridors, R-2476 for vertical surfaces—such as book stacks.

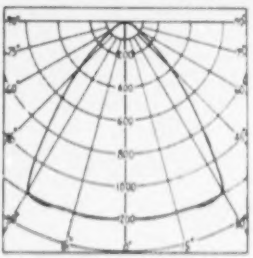
INSTALLATION is simple. All units include a plaster ring which is first set into position before the ceiling is plastered. Flexible wiring from the outlet box is brought to the socket in the fitter. The fitter (for R-1894, R-5544 and R-2120 series) is attached to the neck of the unit and the assembly, resting on the finishing ring, is bolted into position to the ears of the plaster ring. R-2470 series screws into a threaded fitter and tightens against a finishing ring.



Candlepower Distribution R-5544—300 w. lamp 8916 lumens.



Above: Candlepower Distribution R-2120 300 w. lamp—3650 lumens.
Below: R-2472 150 w. lamp—1600 lumens.



Candlepower Distribution R-1894 200 w. lamp—3640 lumens.

Unit Catalog Number	Lamp Wattage	Distribution	Spacing Units on Centers Not Exceeding Times the Mtg. Height	Dimensions—Inches Diam. Face Plate	Depth of Recessed Portion	Glass Dia.	Termination	Net Wt. Each Unit
R-1894	200-300*	Intensive	1.25	15 1 2	11 3 4	13 1 2	Tapped for 1/2" pipe	14 lbs.
R-5544	200-300*	Intensive	1.25	16 1 4	6 3 8	16		18 lbs.
R-2120	150			12 3 8	7	9 3 4		8 lbs.
R-2130	200	Extensive	2.0	16 3 4	8 1 4	18	Tapped for 1/2" pipe	10 lbs.
R-2140-4	300*			16 3 4	8 1 8	16		14 lbs.
R-2470	150	Extensive	2.0	12 3 8	6 1 4	9 7 8		
R-2472	150	Asymmetric Extensive	2.0	12 3 8	6 1 4	9 7 8	Knockouts for 1/2" conduit	8 lbs.
R-2476	150	Asymmetric Intensive	1.0	12 3 8	6 1 4	9 7 8		

*G-16 light center medium base lamp

Wire is not furnished with these units

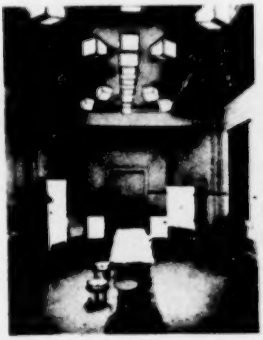
HOSPITAL SURGERY

Multiple Spot Len Systems for Major and Minor Surgeries

(Underwriters Approved)

MULTIPLE SPOT LENS SYSTEM

The Holophane Multiple Spot Lens System was originally designed for Minor Surgeries, Delivery Rooms, First Aid Rooms, Emergency Rooms, Fracture Rooms, and since then, the practicability of the system from an operating stand point, its flexible adaptation to unusual structural conditions, and its low cost, have made it popular even for Major Surgery use.

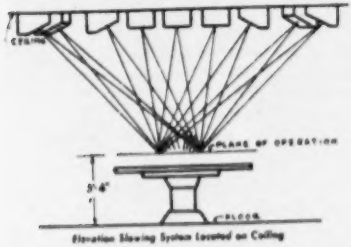


No. D-729-L

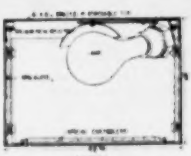
No. D-729-T

Performance

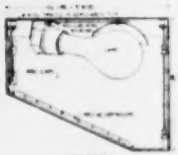
The system provides a number of light beams converging to form a high intensity spot restricted to the operating area; this illumination decreases gradually over the remainder of the table without a line of demarcation. At the same time, the system spreads the correct degree of general illumination throughout the room. It operates without glare, interfering shadows or sensible heat. Each system is separately designed for the specific purpose it is to serve, for the exact directions of light required and for the amount of illumination needed.



Elevation Showing System Located on Ceiling



D-729-L



D-729-T

Permanence

It is composed of imperishable optical glass and sturdy steel mechanical assembly to endure the life of any building.

Safety

It is located well outside the zone of explosion hazard. There is no glass in the area above the table. There are no polished reflecting surfaces in which the patient, administered a local anesthetic, can see the operation mirrored. Multiple lamping insures freedom from light interruption due to individual lamp failure.

Choice of Systems

Separate systems are available for mounting on the ceiling or recessing within it. A complete Multiple Spot Lens System of the SURFACE-TYPE is composed of a number of individual lighting elements. Those that are level are designated as D-729-L; those which are tilted are known as D-729-T.

In a system of the RECESSED type, the level units are the H-775-FL, and the tilted ones are designated as H-775-TF.

With this system there is no necessity of shifting a hanging fixture over the patient in order to obtain the desired light pattern. Instead, these may be obtained—in the modern manner — through the use of various combinations of switches safely located on the wall. Naturally, the greater number of individual elements there are, the larger will be the varieties of possible light patterns. The Holophane Engineering Department will cooperate in preparing layouts to meet the specific requirements.

Catalog No.	Lamp Watt	Dimensions Inches: Roughing Slot Length	Roughing Slot Width	Roughing Slot Depth	Face Plate Length	Face Plate Width	Net Wt. Each Unit
D-729-L	150	10-3 4	10-3 4	2 3 8	Surface Mounted Units		10
D-729-T	150	10-1 2	9	3 1 2			9
H-729-FL	150	13-1 2	13-1 2	12-1 16	15-1 4	15-1 4	26
	300						
H-755-TF	150	19-1 8	13-1 4	14-1 8	20-7 8	14-7 8	42
	300						

Plaster rings not furnished. Wire is not furnished with these units.

Twilite Semi-indirect Unit With Night Light Feature

HOSPITAL NURSING AREAS

No. C 7346

No. S 7346

This unit is for use specifically in nursing areas, wards, semi-private and private rooms. Consideration was given to the basic factors that are encountered in sick rooms. The physical predicament of the hospitalized patient is taken into account by the Holophane Twilite. The five features that make the Twilite the logical first choice of this critical application are:

1. The semi-indirect light distribution gives the room a soft, even illumination suitable for this purpose.

2. Since the unit is luminous, there are no "blind spots" to irritate the patient who may have to gaze at the ceiling for long unbroken periods.

3. At the same time the Twilite has a low enough surface brightness of its own so that it does not become a glare source.

4. Its dust and dirt depreciation is low for two reasons: a. The light control surfaces are entirely enclosed. b. Dust does not incline to settle on the steep sloped surface of the top of the Twilite.

5. There is no permanent depreciation what-so-ever; easy cleaning restores the original lighting efficiency.

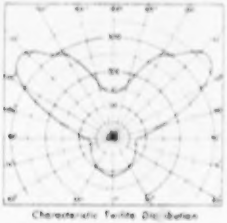
Mechanical Description

The glassware is at the widest portion 14" in diameter; it is in two parts; the upper and lower members are held together by metal clips. Inside the lower section of the Twilite is a diffusing glass liner—this liner reflects the greater portion of the light upward but transmits some light downward. The unit is designed so that it can be equipped with either a 150 or 200 watt standard lamp plus two small 7 watt candelabra base auxiliary lamps.

Depending on requirements, the unit is furnished either as a ceiling or suspension fixture. See table below for additional mechanical information.

Catalog Number	Lamp Wattage	Distribution	Dimen. Inches Diam.	Dimen. Inches Ovh.	Termination	Net Wt. Each Lbs.
C 7346	150	Semi-Indirect	14	17½	Outlet Box Stem	15 lbs.
S 7346	Two 7		14	15½	½" Female Nipple	18 lbs.

Wire is not furnished with these units.



Characteristic Twilite Distribution

HOSPITAL IN BILT

Holophane In-Bilt Night Light No. W-792

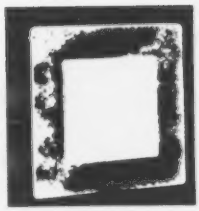
(Underwriters Approved)

For night lighting in hospital sickrooms, corridors, theatre aisles, bedrooms in homes, hotels, clubs, nurseries, and similar locations.

Holophane Controlens W-792 throws an even sheet of low intensity light over the lower part of the room or corridor without glare. The light cuts off abruptly at knee height. When concealed by placement in the wall beneath the bed, the floor is lighted uniformly, revealing the room for night inspection without waking the patient. Switches should be located outside the door.

For corridor lighting, the height of the top of the unit may be determined by dividing the corridor width by 4.3.

The shallow depth of the unit (3") allows installations in the thinnest standard structural partitions. This shallowness is accomplished through use of the slender T-6½, 25 watt tubular lamps.



Above: No. W-792.
At right: Sketch showing section through W-792.

The unit recesses into the wall and requires little attention. The prismatic Controlens is easily kept clean by dusting or washing with a damp cloth. The front face is easily removed to service the lamp.

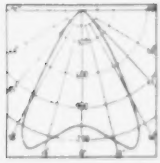
Unit Catalog Number	Lamp Wattage	Dimensions in Inches: Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Weight Each Lbs.
W-792	25 (T-6 1/2 CL)	7 1/2	7 1/2	3	8 3/8	8 3/8	7 3/4	7 3/4	4 lbs.

Wire and plaster rings not furnished.

Holophane Psychiatric Lights Nos. A-739 and A-765

(Underwriters Approved)

Psychiatric Unit



Candlepower Distribution No. A-765

The need for keeping "disturbed" patients under strict control and at the same time preventing them from harming themselves, dictates the mechanical features of the lighting system.

These special purpose Controlens units have the following characteristics which make them suitable for this critical application:

1. The unit is designed for flush installation in the ceiling—the hardest place for the patient to reach.
2. The unit is constructed as strong mechanically as possible.
3. The Controlens is HI-STRESS (high impact resisting) prismatic glass.
4. Unit can only be opened with special tool.
5. The unit is dirt-tight and requires a minimum of maintenance; it need only be opened to replace burned out lamps.
6. The units contain, in addition to the main lamp, an adjustable 10 watt auxiliary lamp that can always be located to throw the night light beam away from the bed so as not to awaken or disturb the patient.

Unit Catalog Number	Maximum Watts Per Lamp	Dimensions in Inches: Roughing Box Length	Roughing Box Width	Roughing Box Depth	Face Plate Length	Face Plate Width	Plaster Opening Length	Plaster Opening Width	Net Weight Each Lbs.
A-739-60	60								
A-739-100	100	18-1/2	18-1/2	4-1/2	11-3/4	11-3/4	10-3/4	10-3/4	11 lbs.
A-739-150	150								
A-765	300	16-1/8	16-1/8	6	13-3/8	13-3/8	14-3/8	14-3/8	19 lbs.

Only socket for 10 watt lamp wired. Plaster rings not furnished.

Dual Purpose Unit for Examination and Treatment Rooms

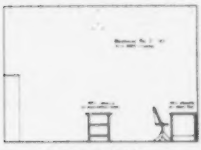
HOSPITAL EXAMINATION

Holophane Medical Examination Unit No. S-5745

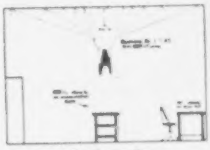
The nature of the work performed by the physician in a medical examination room calls for two types of lighting:

1. High level of general illumination to light the entire room.
2. An intense beam directly on the examination table when he is checking the patient.

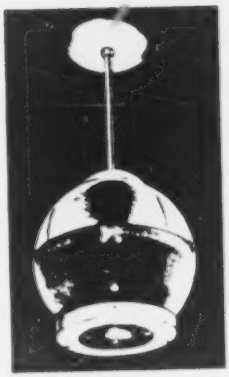
The Holophane medical examination unit is a double duty lighting device satisfying both requirements.



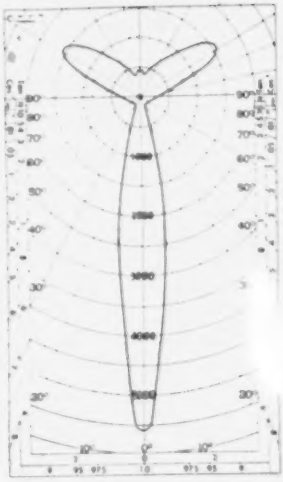
General Illumination
Diaphragm Closed



Examination Use
Diaphragm Open



No. S-5745



Candlepower Distribution
Curve No. S-5745 (Diaphragm open)
500 watt lamp—10,000 lumens.

Convenience

This pendant fixture may be easily attached to any standard outlet box; it may just as readily be moved to a new location. It provides light for the examination table, etc. without the *inconvenience* of employing accessory lighting equipment and also assures adequate general illumination at all times.

Mechanical Features

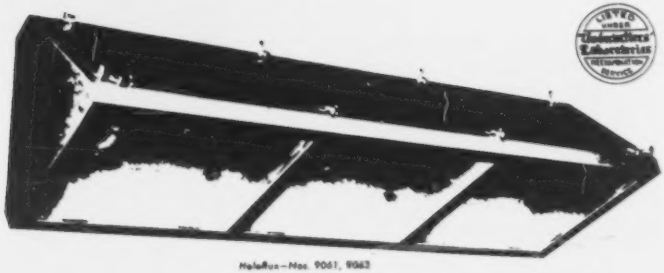
The prismatic glass globe is entirely smooth outside and can be readily wiped clean with a damp cloth; the fixture finish is smooth and washable as well. The lamp is directly accessible through a hinged bottom. A standard 500 watt incandescent lamp is used.

Unit Catalog Number	Lamp Wattage	Distribution	Domes Diam.	Inches Dpth.	Termination	Net Wt. Each Unit
S-5745	500 I.F.	Combination Direct Spot and Totally Indirect	14	33-3/4	3/8" Female Hickey	30 lbs

Wire is not furnished with these units.

FLUORESCENT INDUSTRIAL DUST TIGHT

Holoflux Dust Tight Unit



Holoflux—Nos. 9061, 9062

Underwriters Approved Class II

GROUP E—atmospheres containing metal dust.

GROUP F—atmospheres containing carbon black, coal or coke dust.

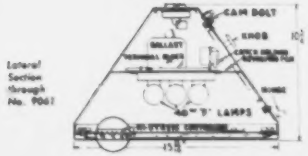
GROUP G—atmospheres containing flour, starch and grain dust.

This newly designed unit has the smooth outside CONTROLENSES, of shock resisting HI-STRESS crystal glass, clamped and cemented in the bottom to make a rigid and permanent dust-tight seal. This seal need never be disturbed as easy access to lamps and ballast may be had through a solid steel hinged door in the side of the unit, secured by quick-acting cam-type bolts.

For servicing, the plate holding the sockets, starters, lamp and ballast can be rotated—by opening a spring snap latch—so that either the lamps and starters or the ballast is toward the door. The entire socket, starter, ballast and wiring assembly with their holding plate can be removed through the door by disconnecting the wiring from the terminal block.

Replacement Parts

Controlens No. 9060. Socket No. SO-13 for starter end and No. SO-12 for other end. Starter No. Mi-85. Door gasket No. GA-99. Two lamp 110-125 volt, 60 cycle ballast No. Mi-113. Three lamp 110-125 volt, 60 cycle ballast No. Mi-114.



Lateral Section through No. 9061

The light distribution of the CONTROLENS is intensive, resulting in maximum light on the work, without glare in the eyes of the worker. The sum total is a new high in initial efficiency and improved seeing conditions—with a dust and dirt depreciation so low as to be almost negligible. The ease of maintenance designed into this unit will appeal both to those who service it and those who foot the bills.

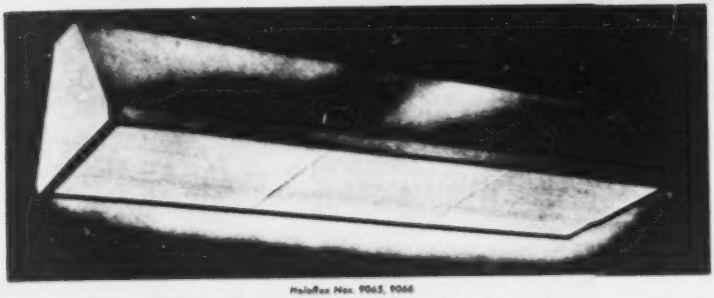
High power factor, two or three lamp, 110-125 volt 60 cycle ballast are standard equipment. ***The unit is shipped with sockets and ballast wired to a terminal block so that no soldered or taped connections are required.*** Contractor makes his connections directly on the block.

See page 25 (facing) for Candlepower Distribution Curve

Unit Catalog Number	Lamp Wattage	Distribution	Space Units on Centers Not Exceeding Times the Mtg. Height	Length	Dimen.-Inches Width	Depth	Termination	Net Wt. Each Unit
9061	3—40 W "T"	Intensive	1.35	31-3/4	16	10-3/4	Two 3/4" Female Thaled Pipe Fittings spaced 29-3/4" apart	89 lbs.
9062	2—40 W "T"							86 lbs.

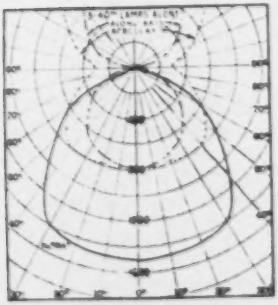
Holoflux Industrial Enclosed Unit

INDUSTRIAL FLUORESCENT ENCLOSED



Holoflux Nos. 9065, 9066

For such industrial locations where a shielded unit, having a high efficiency and enclosed construction to resist depreciation due to dust and dirt is desired, Holophane has developed the 9065 and 9066. In these units, the Hi-Stress Controlenses (high-impact and heat resisting) redirect wasteful high-angle light down into useful zones; at the same time protecting the eyes of the operator from the glare of the lamps.



Candlepower distribution—No. 9066
2—40 watt "F" lamps 6300 lumens.

Although all fluorescent units are asymmetric and their distribution curves vary for each plane between, across and along the lamp, we have demonstrated experimentally that a properly weighted curve will be accurate within one percent for point-by-point calculations. The above curve is weighted in this manner.

These units are of the suspension type with adequate support permitted through two ½" female pipe fittings in the top of the unit. The reinforced steel housing is finished white enamel on the inside and grey baked enamel on the outside.

The three Hi-Stress Controlenses are held in the bottom by gravity. Relamping is easily accomplished by sliding the two end lenses over the center one. The external glass surfaces are smooth and readily cleaned.

Lamp holders are wired to the ballast and a length of wire is provided from the ballast to the support bushing. High power factor 2 or 3 lamp 110-125 volt 60 cycles ballast is standard.

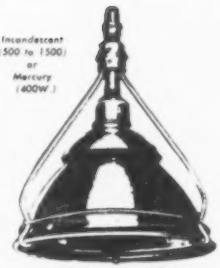
Replacement Parts

Controlens No. 9060, Lampholder No. SO-13 for starter end and No. SO-12 for other end. Starter No. Mi-85. Two lamp 110-125 volt 60 cycle Ballast. Mi-113 three lamp 110-125 volt, 60 cycle Ballast No. Mi-114.

Catalog Unit Number	Lamp Wattage	Distribution	Spacing Units on Centers Not Exceeding Times the Mtg. Height	Light	Dimen. Inches Width	Depth	Termination	Basic Unit Net Wt.
9065	2—40 W. F.	Intensive	1.25	40	15	9 3 8	½" Female Threaded Pipe Fittings Spaced 30 Apart	9 1 lbs.
9066	3—40 W. F.							9 4 lbs.

HIBAY

Heavy Duty Units for High Mounting

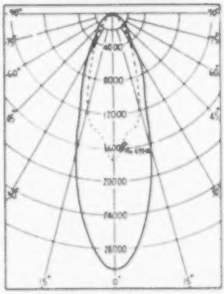


Holophane Hibay Reflector

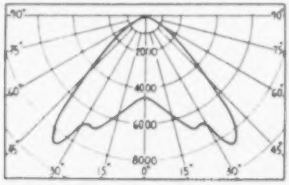
Where lighting units are mounted at great heights—such as are found in heavy industry, turbine rooms, etc. – the use of intensive and concentrating light distribution is a necessity, otherwise, a large portion of the light will be wasted on the upper side walls or intercepted by the mass of the machinery itself.

The Holophane Hibay Unit was designed specifically for this application – both from the standpoint of the illumination results and the mechanical ruggedness required. Some of these advantages are:

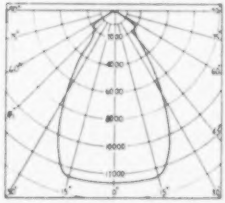
1. Three highly efficient prismatic reflectors from which to choose the distribution which gives the greatest usable illumination for any given room proportion.
2. Adjustments in lamp positions in each make it possible to obtain intermediate settings between standard distributions.
3. Corrosive atmospheres will not permanently affect glass reflecting surfaces.
4. When dirty, the smooth-inside glass reflector is restored to efficiency by the use of ordinary washing compounds.
5. Aluminum cover is spun on and sealed over external prisms to add strength and insure easier maintenance. Hibay reflectors are safe even if accidentally cracked by an impact. The glass will not tumble out of the cover.
6. A socket with nickel plated screw shell and contacts entirely outside the reflector, reduces socket troubles.
7. Steel tripod type holder and ring grips the reflector and assures the exact positioning of the lamp. They constitute a vital all-round safety device as well.
8. Steel parts are plated to resist corrosion.



Solid Line No. 690 AL 1000 w. lamp 20,700 lumens. Dotted line No. 693 AL 400 w. Merc. lamp 16,000 lumens.



Candlepower Distribution
692 AL 1000 w. lamp—21,000 lumens

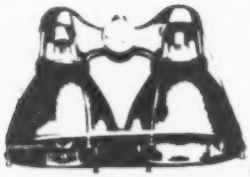


691 AL 1000 w. lamp—20,700 lumens.

Catalog No.	Lamp Wattage	Distribution	Spacing Units on Centers Not Exceeding (times the Mtg. Height)	Dimensions—Inches Diameter	Depth	Net Wt. Each Lb.	Termination
689 AL	300 – 500	Intensive	1.0	15-1/8	20-3/8	14	All 3/4" Stem and Loop
690 AL*	500 750	Concentrating	0.6	31-3/4	36-5/8	38	
691 AL	1000	Intensive	1.0	19	27	33	
692 AL	1500	Extensive	2.25	19	27-3/8	34	
693 AL	400 Merc.	Concentrating	0.6	21-1/8	23-1/4	28	

*Special shorter overall fixture can be supplied on order. Socket for 750 and 1000 watt bi-post lamps $1.00 extra.

Wire is not furnished with these units. Specify if 500 or 1500 watt lamps are to be used.



Holophane Combination Unit

The Holophane 5050 series makes use of a cast aluminum yoke with a removable side plate for easy wiring. The reflectors rest on the steel pan and are clamped up against the yoke by means of six steel threaded rods and vibration-proof nuts. Reflectors are interchangeable so that a choice of distribution and wattage combinations may be had.

HIBAY

Combination Mercury and Incandescent Units—5050 Series

When it is desired to use a combination of mercury and incandescent lamps for the lighting of an area, it is best to place the complementing color sources close together so that the light will arrive at the work thoroughly mixed. This will eliminate areas of noticeable color contrast at the floor level, and reduce color shadows on the work.

Since it is not physically possible for two light sources to simultaneously occupy the focal point in a reflector—the point where reflector operates most efficiently—it is better to have two reflectors for maximum output. Joining them together in a single yoke makes wiring, installation and maintenance simpler and cheaper.

Catalog Number	Lamp Wattage	Distribution	Maximum Spacing	Dimen. Inches		Termination	Net Wt. Each Lbs.
5030	1-400 Merc. 1-750 Bi-post		1.5	All Units			37 lbs.
4030	1-400 Merc. 1-500	All	1.5	Length	26-1/4	All	36 lbs.
				Width	13-3/8	Tapped for 3/4" Pipe	
4040	2-400 Merc.	Intensive	1.5	Depth	15-3/8		37 lbs.
5023	1-250 Merc. 1-856		1.5				37 lbs.

Wire is not furnished with these units. Suffix AL added to catalog number indicates addition of aluminum cover to standard unit—for dirty locations.

Cranelites . . . Nos. 694, 674

A common location for high mounting units in an industrial plant is above a craneway. With the massive bridge cranes now in use, this often results in the blocking of light from the area beneath the crane at the time and at the spot where the light is most needed.

To eliminate this condition, it has been the practice to place reflectors on the under side of the crane. Heretofore, such reflectors have been restricted to small, compact units selected chiefly for their ability to stand up under rough service rather than for their efficiency in producing adequate illumination.

Holophane Cranelite

For this application, Holophane has designed efficient, rugged lighting units which will withstand the whip and vibration produced by the crane movements and at the same time provide a concentrating distribution like the 690-AL.

Construction Features

Three compound double action steel springs absorb shock up and down as well as sideways. These springs are adjustable for tension. Destructive shock and whip is thereby damped. The Cranelite is fastened to the crane by a 10¼ inch diameter, ½ inch thick plate. Wide flange construction assures solid contact with the crane. A ¾ inch female pipe thread is provided in the socket for wiring.

Easy Relamping

The Cranelite when installed under the catwalk is relamped by raising a section of the catwalk. When mounted on the edge of the catwalk it is swung up for relamping by using an angle section attached to the catwalk.

Catalog No.	Lamp Wattage	Distribution	Maximum Spacing	Dimensions—Inches Diameter	Depth	Termination	Net Wgt. Each Lb.
674	300-500	Concentrating	15' Centers	13-3/4	15-3/4	Cast Iron to be bolted to Crane. Wire Tapped 3/4" Female Pipe Thread	32 lbs.
694	750-1000*	Concentrating	20' Centers	22-5/8	21		40 lbs.

*1Socket for 750 and 1000 watt bi-post at extra cost.

Wire is not furnished with these units.

LOBAY

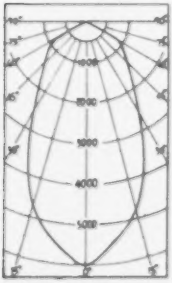
Efficient, Permanent, Safe for Industrial Low Bay Applications

In the case of low bay lighting the selection of equipment should be made on the basis of the best light distribution for each individual job. This, in turn, depends on the arrangement and types of machinery and also the location of aisles and columns. Very often, the requirements are not uniform over the entire floor, so that the most efficient method for putting the light where it is needed—to the degree it is needed—is to have units with different distributions from which to choose. The general appearance of the shop is improved if the units are mechanically similar; and there is the further advantage that they may be interchanged, at any time, if the production line is re-arranged.

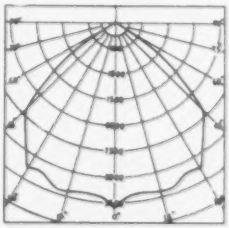
When used without an aluminum cover, Holophane Lobay reflectors afford the advantage of light transmission to the ceiling, which improves the lighted appearance of the interior.

The optical design of these reflectors includes a 30° shielding angle. This provision reduces direct glare.

Typical for Nos. 682, 683, 686, 684.

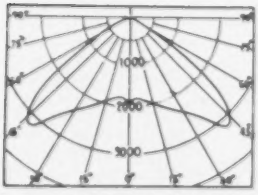


Candlepower Distribution No. 686-AL—500 w. lamp—10,500 lumens.

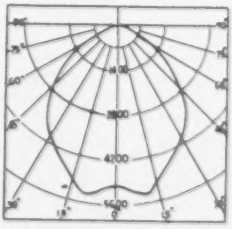


Candlepower Distribution No. 683-AL—500 w. lamp—10,500 lumens.

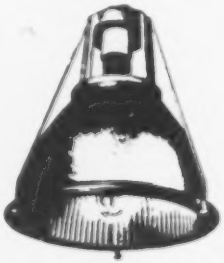
Typical for Nos. 685-AL, 685-S-AL, etc.



Candlepower Distribution No. 682-AL—500 w. lamp—10,500 lumens.



Candlepower Distribution No. 645-AL—400 w. Mercury Lamp 16,000 lumens.



No. 645-AL

Efficient, Permanent, Safe for Industrial Low Bay Applications

LOBAY

Holophane Lobay units feature the choice of three reflectors with focusing, intensive and extensive distributions. The housings are identical and the reflectors may be interchanged, or covers added, at any time without the necessity of dismantling the electrical connections. The reflector is supported at the bottom in a holding ring and clamped up against the fitter by means of three threaded rods and nuts.

Fitters are of the skeleton type to permit free ventilation by chimney action. Socket shells are nickel plated to prevent lamps from sticking.

Units can be adapted for use with 750 watt medium Bi-post lamp by substitution of the proper socket. Add suffix —B— for this series.

No. 645 is designed for use with the 400 watt mercury lamp. It is similar in appearance to the incandescent units, but the parts are NOT *interchangeable with them.*

684 (684-AL) being smaller than the 682, 685, and 686 line is not interchangeable with them.

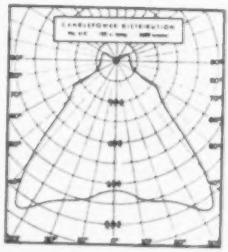
Catalog Number	Lamp Wattage	Distribution	Space Units on Centers Not Exceeding Times the Mtg. Height	Dimen. - Inches Diam.	Dpth.	Termination	Net Wt. Each Lbs.
684 684-AL	200-300†	Intensive	1.5	11-7/8	11-1/2		4 lbs. 4 lbs.
687 687-AL	300*-500	Extensive	2.0	13-13/16	12-3/8	Alt	9 lbs. 9 lbs.
685 685-AL	300*-500	Intensive	1.5	13-13/16	13-3/8	Tapped for ¾"	9 lbs. 10 lbs.
686 686-AL	300*-500	Concentrating	0.75	13-13/16	13-3/8	Pipe	9 lbs. 10 lbs.
682-B-AL 683-B-AL 686-B-AL	750 Watt Bi-post	Extensive Intensive Concentrating	2.0 1.5 0.75	13-13/16	13-3/8	Pipe	9 lbs. 9 lbs. 9 lbs.
645 645-AL	400 Watt Mercury	Intensive	1.25	13-13/16	13-3/8		11 lbs. 11 lbs.

† 300 watt 6" light center medium base lamp.
* Mogul base lamp. Wire is not furnished with these units.
Suffix AL added to catalog number indicates addition of aluminum cover to standard unit—for dirty locations.

One-Point-Five Lobay Reflectors Nos. 606, 615

Nos. 606, 615

For all kinds of industrial and commercial utility applications.



These low cost units are designed to provide adequate even illumination on spacings as great as 1.5 times the mounting height above the work. Unit is designed with a shielding angle of 25° to effectively eliminate glare. Economical to install and operate. Two sizes are available to accommodate lamps ranging from 25 to 150 watts.

Nos. 606-BC, 615-BC

The prismatic glass reflecting surface is impervious to depreciation even under the toughest operating conditions. Fixture parts are of cast aluminum, durable and non-corrosive. Reflectors are of heavy pressed prismatic glass with reinforcing flange at bottom edge.

Temporary dirt and dust depreciation is low because of smooth inside reflector surface and chimney action of the ventilated fitter.

Catalog Number	Lamp Wattage	Distribution	Space Units on Centers Not Exceeding Times the Mtg. Height	Dimen. - Inches Diam.	Dpth.	Termination	Net Wt. Each Lbs.
606 615	25-40-60 100*-150	Intensive	1.5	7 10	6-3/8 10	Tapped for 1/2" Pipe	1 lb. 3 lbs.
606-BC 615-BC	25-40-60 100*-150	Intensive	1.5	7 10	5-5/8 9-1/4	3-1/4" or 4" Box Cover	3 lbs. 3 lbs.

Wire is not furnished with these units.
*Use 1-3/8 socket extension for 100 watt lamp.

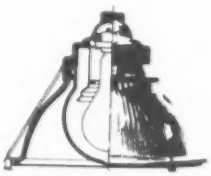
VAPOR TIGHT
DUST TIGHT

Intensive and Extensive Distributions

National and Local Electrical Inspection Authorities require, for certain defined locations, lighting equipment which is either vapor-tight or dust-tight. Holophane has developed two lines of light control units to meet all of the job conditions in these two fields.

Why you should specify Holophane vapor-tight and dust-tight units.

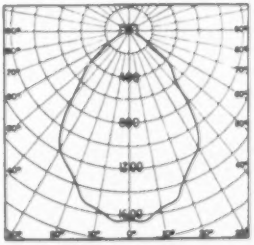
Plenty of equipment is available in these two classifications to fit the safety requirements, *but* only Holophane specifics bring the added gain of precise light control—affording the suitable distribution for the work in question. Holophane units deliver more useful light than any other system.



Nos. 06561, 06553 V or D.

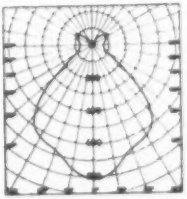
When to use Holophane vapor-tight equipment Underwriters approved.

Moisture areas—acid plants, artificial leather factories, boat building plants, breweries, distilleries, warehouses, dye, paint and varnish plants, textile dyeing, finishing and bleaching, synthetic rubber and other chemical plants.

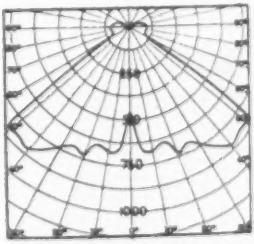


Candlepower Distribution 06561 V or D 200 w. lamp—3650 lumens.

Nos. 02338 V or D.

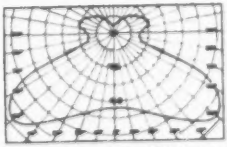


Candlepower Distribution 02338 V or D—150 w. lamp—2600 lumens.



Candlepower Distribution 06553 V or D. 300 w. lamp—3650 lumens.

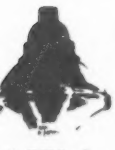
Nos. 02328 V or D.



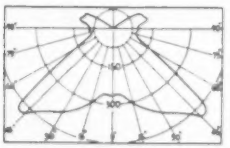
Candlepower Distribution 02328 V or D—100 w. lamp—1600 lumens.

Intensive and Extensive Distributions

VAPOR TIGHT
DUST TIGHT

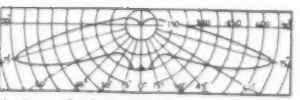


No. 02470 V or D.



Candlepower Distribution 02470 V or D—150 w. lamp—2533 lumens.

Nos. 830 and 832 D.



Candlepower Distribution No. 832 D—200 w. lamp—3640 lumens.

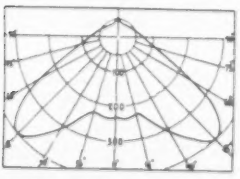
When to use Holophane dust-tight equipment. Underwriters approved class II

GROUP E—atmospheres containing metal dust.

GROUP F—atmospheres containing carbon black, coal or coke dust.

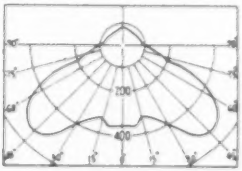
GROUP G—atmospheres containing flour, starch, and grain dust.

The units in both categories are the same except for the type of gasketing used. Those units with the identifying suffix *V* belong to the *vapor*-tight line; they have a rubber gasket. Units with the identifying suffix *D* are *dust*-tight units; they have asbestos gasketing. Underwriters requirements specify that these units shall be gasketed for the two purposes just as they are described above. All units have been carefully designed to comply in full to the Underwriters Laboratories requirement. New research developments have made it possible to make some of these units with smooth exposed glass for the very best maintenance.



Candlepower Distribution Nos. 02368 V or D—150 w. lamp—2600 lumens.

Nos. 02368 and 02378 V or D.



Candlepower Distribution Nos. 02378 V or D—200 w. lamp—3700 lumens.

Catalog Number	Lamp Wattage	Catalog Number	Lamp Wattage	Distribution	Space Units on Centers Not Exceeding Times the Mtg. Height	Dimen. Diam.	Inches Dsh.	Termination	Net Wt. Each Lbs.
VAPOR-TIGHT		DUST-TIGHT							
02470-V	100*-150	02470-D	100*-150	Extensive	2.0	9-7/8	10-3/4	Tapped for ½" pipe	6
02328-V	100*-150	02328-D	150	Extensive	2.25	9-3/8	11-3/8	Tapped for ½" pipe	6
02368-V	100*-150	02368-D	100*-150	Extensive	2.0	10-1/2	12	Tapped for ½" pipe	9
02378-V	200	02378-D	200	Extensive	2.0	12	13-1/4	Tapped for ½" pipe	12
02338-V	300	02338-D	150	Intensive	1.0	10-1/2	13-5/8	Tapped for ½" pipe	9
02480-V	300	02480-D	300	Extensive	2.0	12-1/4	13	Tapped for ½" pipe	11
06361-V	300*	06361-D	300	Intensive	1.25	16-13/16	13-13/16	Tapped for ¾" pipe	18
06353-V	300*	06353-D	300	Extensive	2.0	13-7/8	13-3/4	Tapped for ¾" pipe	13
02472-V	100*-150	02472-D	100*-150	Asymmetric Extensive	2.5	9-7/8	10-7/8	Tapped for ½" pipe	6
02476-V	100*-150	—	—	Asymmetric Extensive	1.0	9-7/8	10	Tapped for ½" pipe	6
—	—	830-D	100*-150	Wide Spread	4.0	9-1/8	10-13/16	Tapped for ¾" pipe	8
—	—	832-D	300	Wide Spread	4.0	10-1/4	13-3/16	Tapped for ¾" pipe	10

* Use 1-3/8" socket extension. * Medium base—6" light center lamp. Wire is not furnished with these units.

ENCLOSED UNITS SYMMETRIC AND ASYMMETRIC

In certain industrial locations, there is a preference for totally enclosed lighting units. Holophane enclosed units permit greater diffusion and completely shield the lamp from view. Also, the very fact of enclosure enables these units to resist dust and dirt, and so they are that much easier to maintain.

Symmetric

Some of these job conditions can be met with units having a symmetric distribution (circle of light beneath the unit). These units are designated as Nos. 02470-BC, 02180-S and 02490-S. See table below for essential details.

Asymmetric

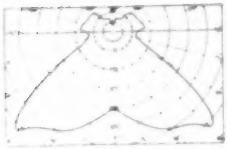
Other conditions are best treated with units having an asymmetric distribution (more light in some directions than in others). To mention just two of these; 1—odd shaped areas such as aisles or corridors, 2—work operations on vertical or sloping surfaces.

02470-BC

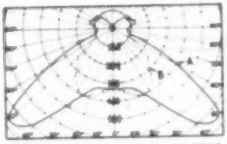
02472-BC

02476-BC

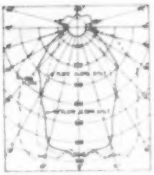
02180-S



Candlepower Distribution No. 02180
200 w. lamp—3640 lumens.



Above: Candlepower Distribution 02472-BC —150 w. lamp—2600 lumens. "A"—along aisle. "B"—across aisle. At right: Candlepower Distribution 02476-BC—150 w. lamp 2535 lumens.



Units with suffix BC for outlet box attachment. Units with suffix S for ½" pipe attachment.

From the table below, you can select the proper unit according to wattage, distribution, and suitable fixture termination for your own job conditions.

Catalog Number	Lamp Wattage	Distribution	Space Units on Centers Not Exceeding Times the Mtg. Height	Dimen. Diam.	Inches Depth	Termination	Net Wt. Each Unit
02180-S	300	Extensive Symmetric	2.0	12-1/8	12	Tapped for ½" Pipe	9 lbs.
02490-S	300*	Extensive Symmetric	2.0	12-1/8	12	Tapped for ½" Pipe	10 lbs.
02470-BC	1000 — 1500	Extensive Symmetric	2.0	9-3/4	7-15/16	Box Cover for 4" Outlet Box	6 lbs.
02472-BC	1000 — 1500	Extensive Asymmetric	2.0	9-7/8	7-15/16	Box Cover for 4" Outlet Box	6 lbs.
02476-BC	1000 — 1500	Intensive Asymmetric	1.0	9-7/8	7-3/8	Box Cover for 4" Outlet Box	6 lbs.
H-2076-S	1000 — 1500	Asymmetric	1.0	8-3/4	11-3/8	Tapped for ½" Pipe	5 lbs.

* Medium base—6" light center lamp.
† Use 11½" socket extension with 300 watt A-21 lamp.
For units of the 02470, 02472 and 02476 series to have termination for mounting on pipe, see the 02470-V, 02472-V and 02476-V as shown on page 31.

The following units have an asymmetric distribution and their proper use is indicated as follows:

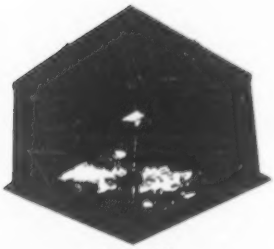
1. No. 02472-BC is logical in aisles, or any area long and narrow.
2. No. 02476-BC is for the lighting of stock bins, book stacks, or in manufacturing plants to light vertical or sloping parts.

No. H-2076-S

No. H-2076-S has an open bottom, but is similar in distribution to the 02476-BC. It is likewise used to light stock bins, book stacks, etc.

Controlens Safety Unit to Reduce Explosion Hazard

SPRAY BOOTH



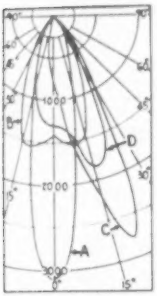
No. F-1765-SB

Holophane Spray Booth Unit No. F-1765-SB

1. F-1765-SB meets all the safety needs for this application without the use of expensive and inefficient "explosion-proof" units.

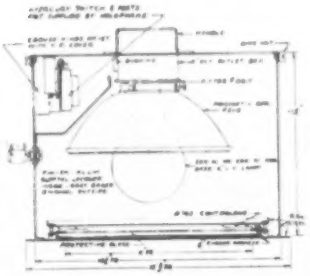
2. Its overall light output is greater.

3. Variety of light distribution makes it possible to focus the light where it is needed. The higher resulting illumination enables the operator to more easily detect uneven application of the paint.



Left – Distribution Curves shown are for 1765 optical combination (concentrating) using a 200 watt 2640 lumen lamp. The unit can be arranged to provide any of the four light patterns shown or intermediary distributions. To find illumination use Curves at left and apply point by point calculations. Unless otherwise specified, curve "D" is provided.

Some operations require a wider spread of light and the unit with 1774 optical combination provides such a distribution.



Line Sketch No. F-1765-SB

Mechanical Features

The Controlens, prismatic reflector and lamp are mounted in a 16 gauge steel roughing box. The Controlens is covered with a ¼" heat treated glass plate to: 1. Give protection against breakage; 2. Present a smooth surface for ease in cleaning from within the booth. The roughing box is equipped with a lift-off top for access to the lamp. An optional mercury switch can be installed so that when the top of the roughing box is removed, the lamp circuit is broken. (This mercury switch is not supplied by the Holophane Company).

The unit is equipped with an orifice which should be connected to a compressed air supply of 6 lbs. per square inch. In this way, the interior of the unit is continually washed out with clean air at above atmospheric pressure, so that there is no possibility of explosive vapors entering the unit. The volume of air required per unit is 0.012 cu. ft. per minute.

F-1765-SB or F-1774-SB is adaptable to installation in walls, ceilings, or soffits. Since conditions vary, we suggest you describe to us your particular needs in the form of blueprints and/or other descriptive information so that we can be helpful in determining the exact details of mounting. See table below for size and other pertinent data.

Unit Catalog Number	Maximum Watts Per Lamp	Dimensions in Inches								Net Weight Each Unit.
		Roughing Box			Face Plate		Plaster Opening			
		Lth.	Wid.	Dth.	Lth.	Wid.	Lth.	Wid.		
F-1765-SB F-1774-SB	500*	16-1/2	14-1/2	13-7/8	15-3/4	13-3/4	14-3/4	14-3/4		33 lbs.

* Medium base—4" light center lamp. Wire is not furnished with these units.

WIDE-SPRED SYMMETRIC

Heavy Duty Refractor Units for Outdoor Lighting

This line is for application (mostly out-doors) where an even low-level of illumination is to be spread over wide areas and produced economically.

The aim of industry is to use all plant space to the fullest extent. Not to be over-looked is the yard area, since it can often be put to valuable use for storage, and in some instances, production work. So out-door lighting must satisfy one or more of these purposes: 1, Protection against theft and trespassing; 2, Safe foot or vehicular traffic from point to point; 3, Sufficient light for rough work.

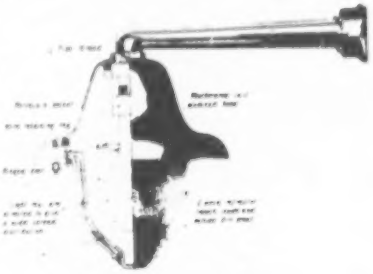
Fig. 1. Showing uniform illumination obtained from ordinary reflectors when spaced close together for interior illumination.

Fig. 2. Showing the alternate light and dark areas resulting from spacing reflectors too far apart.

Fig. 3. Holophane "Wide-spred" lighting units have been designed to spread the light at wide angles over a great area.

Indoor illumination is usually accomplished with reflectors arranged uniformly over the area and designed for a spacing between units equal to their mounting height above the work (Figure 1). Such a system is not economical for the large areas outdoors, both from the standpoint of the number of fixtures which would be involved, and the difficulties of supporting them. Nor does the uniformity or level of illumination required justify such a system.

Any attempt to space these units further apart than their design calls for, gives spotty results with often no light *just where it is needed* (Figure 2). Substituting larger lamps to get light into these intermediate areas results in an unnecessary amount of light under the units—a wasteful practice.

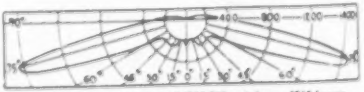


Cutaway view of Typical Holophane Refractor mounted on No. 0871 Bracket

The logical distribution (Figure 3) is furnished by Holophane Refractors, which collect the light from the bare lamp and spread it out at wide angles, as shown in the cut. This equalizes the pattern of light by reducing it under the unit, and building it up in between.

Symmetric Refractors

Where light is to be spread equally in all directions (symmetrical distribution), Holophane provides a range of units designed for wattage as low as 100 and up to 500 watt lamps. With the smaller units (100, 150, 200 watt lamps) an overlap of light can be obtained with a spacing six times the mounting height. With the larger units (300 and 500 watt lamps) spacings as great as twelve times the mounting height can be used.



Candlepower Distribution No. 04338 300 watt lamp—8910 lumens.

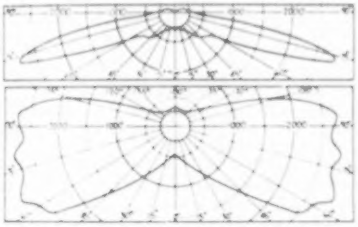
Candlepower Distribution 04333 VP 500 watt lamp—10,000 lumens.

Heavy Duty Refractor Units for Outdoor Lighting

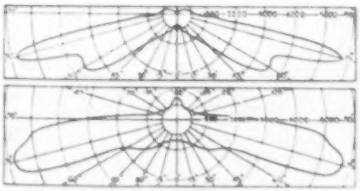
WIDE SPRED ASYMMETRIC

Asymmetric Refractors

Some locations are more effectively lighted with units having an asymmetric distribution (more light in some directions than others.) For example, long passageways between buildings are best lighted by refractors having a fan-shaped distribution. With these units mounted on brackets on building sides the light pattern may be dovetailed and an even coverage of light laid down through the passageways. The light is so controlled that only a very small part escapes back against the wall; the greater portion is spread out and downward in the useful directions.



Candlepower Distributions No. 04377 300 watt lamp, 9910 lumens.
Top—Vertical Distribution. Lower—Horizontal Distribution.



Candlepower Distributions No. 04179-VF 500 watt lamp, 9930 lumens.
Top—Vertical Distribution. Lower—Horizontal Distribution.

Another important application for asymmetric refractors is in the lighting of fence lines and roadways. The problem in both cases is the same—that of illuminating an elongated narrow area from the minimum number of lighting units and poles.

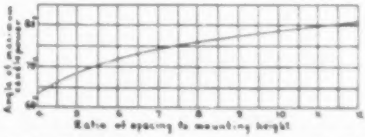
Inspection of the horizontal portion of the candlepower distribution curves shown below at left, indicates how well adapted these refractors are for confining the light to such a pattern. Proceeding further into computations for any given case, it will be evident that asymmetric refractors will increase the illumination in such areas far beyond that which may be obtained from symmetrical lighting.

Construction

The outdoor refractor units consist of a heavy cast-aluminum hood, holding a two-piece bowl-type refractor. The sections of the refractor are of heavy pressed glass nested together so that the exposed surfaces are smooth and dirt resisting. The light controlling prisms are on the outside of the inner piece and on the inside of the outer section. (See cut-away view on opposite page.) Top and bottom gaskets between the glass parts prevent dirt from reaching the important prism surfaces.

A hinged ring, in which the refractor rests, may be locked up against the housing by means of two swivel bolts and nuts. This makes for easy servicing. Gaskets make the unit weather and bug-tight.

The hood is tapped to take a 1½" pipe type bracket. Such a bracket (Holophane #0871) 21¼" long of high strength cast aluminum is available. Details on page 37.



Graph showing angle of maximum candlepower for various spacing ratios. Standard socket setting is for 75°. Instructions are enclosed with fixture giving simple method of adjusting socket for 70° and 80° setting. This graph is applicable to symmetric refractors as well as asymmetric refractors.

Unit Catalog Number	Lamp Wattage	Distribution	Spacing Units on Centers Not Exceeding Times the Mtg. Height	Diameter Dia.	Depth	Termination	Net Wt. Each Unit
04378	300*	Symmetric Widespread	12	13-7/8	13-1/4	All	12 lbs.
04385-VF	500			16-1/4	16-1/4		24 lbs.
04377	300*	Asymmetric Widespread	12	13-7/8	13-1/4	Tapped for 1-1/2" Pipe	12 lbs.
04179-VF	500			16-1/4	17-3/8		26 lbs.
0871	Bracket		21-3/4" Overall				4 lbs.

* Medium base, 6" light center lamp. Wire is not furnished with these units.

† 20-1/2" to center line of 1-1/2" male thread.

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WIDE-SPRED UTILITY AREAS

Small Refractor Units for Limited Areas

Hex 830-832

The application of these units is somewhat different from the reflector units described on the previous page. With their lower wattage, they are logically installed where the area to be lighted is limited. For example, they are used over doorways, in small parking areas, around automobile service stations, etc. Many thousands of these units are being used indoors for the lighting of large warehouses and storage areas. These units are tapped for ½" pipe thread. Mechanically they have all the bug-tight and weather-proof characteristics of the larger units. Bracket No. 0918 is available for these units.

Unit Catalog Number	Lamp Wattage	Distribution	Space Units on Centers not Exceeding Times the Mtg. Height	Dimen. Inches Diam.	Dimen. Inches Diam.	Termination	Net Wt. Each Lbs.
830	100* 150	Symmetric	4	8	10 3 8	Tapped for 1 2 Pipe	
832	200	Wide spread		9	12		
0918	Bracket	6 Span					

* Use 15b socket extension with 100 watt A 23 lamp.
Wire is not furnished with these units. Net Weight units 3 lbs.

Candlepower Distribution No. 832—200 w. lamp—3640 lumens.

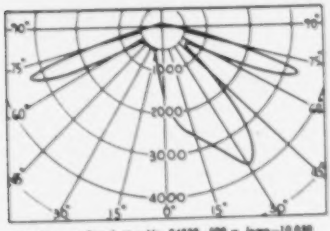
Dual Beam Refractolens Unit

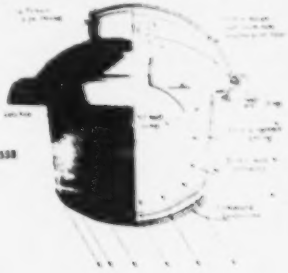
Factory gates, entrances, shipping platforms, etc., need high levels of illumination within a rather limited space—in addition to a general flood of light over the larger adjacent areas.

A unique new prismatic design makes it possible to obtain these two effects with one lighting unit. The Refractolens of the 04558 is a compound design: (1) The refractor section spreads the light out in a circle whose diameter is eight times the mounting height. This enables the fixture to be used as one of the units, in a layout involving the regular Wide-Spred line, for fence or yard lighting, page 34. (2) The "lens" section of the bowl concentrates a strong flood of light downward, offset 30° from the vertical. The resulting illumination is sufficiently intense so that no supplementary lighting is necessary for checking passes, reading labels or inspecting merchandise.

The unit consists of a substantial aluminum housing holding a two-piece bowl-type Refractolens. This refractor rests in a hinged ring which is locked up against the housing by three swivel bolts and nuts. Gaskets make the unit weather- and bug-tight.

The housing is tapped on the side to take a 1¼" pipe-type bracket. Such a bracket (Holophane #6869), 21" long, of high strength cast aluminum is available. Details on page 37.


Candlepower Distribution No. 04558—500 w. lamp—10,000 lumens.


No. 04558

Unit Catalog Number	Lamp Wattage	Distribution	Space Units on Centers not Exceeding Times the Mtg. Height	Dimen. Inches Diam.	Dimen. Inches Diam.	Termination	Net Wt. Each Lbs.
04558	300	Combination Extensive and Concentrating	8	17 1/2	19 7/8	Tapped on Side for 1 1/4" Pipe	26
0869	Bracket					1 1/4" Male Pipe Thread	4

Wire is not furnished with these units.

Outdoor Substation Light

OUTDOOR SUB-STATION

The safe and efficient operation of an outdoor substation requires that the disconnect switches and other important apparatus be well lighted. For example, it should be possible at all times, to visually check whether the switches are open or closed. The high voltage involved necessitates clear vision of the live portions of the structure, especially when manual operation is performed with a stick.

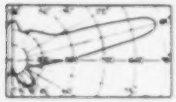
Since the critical parts are located high in the structure, the lighting units should be located below and to one side, so as to illuminate that face of the apparatus which can be seen from the ground. To avoid the possibility of glare, the units are commonly mounted above the eye level and direct their rays upward.

The Holophane sub-station unit is ideally suited for this application. Its upward spread of light is sufficiently broad so that units can be arranged to supplement each other. This is important since the light from the unit nearest to a switch is often blocked by the intricate constructional details of the structure itself.

Choices in the refracting elements are available so that either a complete circle of light may be obtained for use in the center of a station (043386) or a fan-shaped spread for location around the periphery (043776).

By loosening a lock nut, the entire unit may be rotated about its axis while burning, and the angle of maximum candlepower raised or lowered to coincide with the disconnect switches or other important apparatus.

No. 043386



Candlepower Distribution
No. 043386—500 w. lamp
9700 lumens.

No. 0871 Bracket

Catalog No.	Lamp Wattage	Distribution	Spacing	Dimen. Diam.	Surface Dept.	Termination	Net Wt. Each Lb.
043386	300-500	Inverted Wide Spread Symmetric	Special	14-3/4"	19-1/4 Min. 19-3/4 Max.		24 lbs.
043776	300-500	Inverted Wide Spread Asymmetric	Special	14-3/4"	19-1/4 Min. 19-3/4 Max.	Tapped for 1-1/2" Pipe	24 lbs.
0871 Bracket		21-3/16" Span*					4 lbs.

* 20-1/16" to center line of 1-1/2" male thread.

Wire is not furnished with these units.

Mechanical Features

The mechanical features of the unit include a cast aluminum body holding the light controlling Refractor which is protected from the weather by an outer blown-glass globe. The entire top assembly is hinged so that it can be thrown back for relamping. It is clamped in position against water-tight and dust-tight gaskets, by means of three swivel bolts and nuts. The fixture body holds a prismatic diffusing element designed to utilize the downward light and distribute it evenly over the ground.

These units should be mounted on posts or brackets approximately 8' above the ground, so that they may be relamped without danger of coming in contact with the high tension equipment.

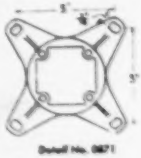
Brackets and Mounting Accessories

No. 0918 Bracket

This is a close fitting outdoor type bracket with a span of 6". It terminates at the wall end in a canopy to cover a 3¼ box. The fixture end has a standard ½" pipe thread.

No. 0871 Bracket

This cast aluminum bracket has a span of 21-⅜" and terminates at the fixture end in a 1½" male pipe thread, turned at right angles. The bracket assembly includes a 4" diameter box with 4 flanged feet for attaching to a wall or post. The feet are drilled to pass ⅜" bolts. Dimensional details are from sketch at right. The box is threaded for the entrance of ¾" pipe.



Outline No. 0871 Bracket Foot

The usual procedure is to install the box and wiring, and cover the opening with the blank cover, provided for the purpose, until ready to install the unit. At that time, the cover is removed and the bracket is secured to the face of the box by means of 4 fixed brass studs.

No. 0869 Bracket

This bracket assembly is identical with the above except that the termination at fixture end is a straight-out 1½" male pipe thread. Span is 21" and installation is as 0871.

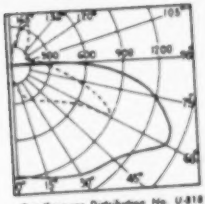
0871-CA (Corner Adaptor for 0871 or 0869)

This adaptor was designed to facilitate the mounting of brackets on the corner of buildings or walls. The toughest problem is usually encountered when attaching to the corner of a brick structure. The holding studs have been located so as to come well within the body of the individual bricks. Other types of walls present no great problem and in any case the adaptor is a great time saver.

WIDE-SPRED ASYMMETRIC SURFACE TYPE

Recessed or Surface Mounting Asymmetric Refractolens

No. U-818



Candlepower Distribution No. U-818
200 w. lamp—3400 lumens.
Solid line—Horizontal distribution.
Dotted line—Vertical distribution.

No. U-818-M

There has always existed a demand for an outdoor lighting unit which could be: (1) recessed in a wall or placed flat against it, (2) would spread the light outward at a wide angle in a fan-shaped pattern. The uses for such a unit include parking yards, entrances, shipping platforms, underpasses, where looks, performance and serviceability are important.

Holophane offers a series of units to meet these conditions.

The basic unit of this line is the U-818 which uses a 200 watt medium base lamp. It has a round cast aluminum housing which may be mounted against a wall or recessed to a depth of 3½ inches. A cast door on the outer face carries a curved Refractolens consisting of an inner and outer prismatic lens, nested together, and so designed that the combination is substantially smooth on the inside and on the outside. The prisms are between the two pieces and protected by a dust-tight seal. Three captive bolts hold the door tightly against the gaskets of the housing and make the unit weather-proof and bug-tight.

Variations of this unit include:

1. U-818-M where an enlargement of the top of the housing is provided so that the unit will accept a mogul base 300 watt lamp. The recessing dimension of U-818-M is 5¼".
2. U-818-S is similar in detail with the U-818-M except that a series socket is substituted so that a 6000 lumen lamp may be used.
3. U-826 is similar in construction to the U-818 but smaller in size — for use with a 100 watt lamp. The recessing dimension is 3¼".

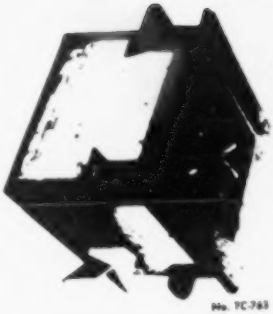
In all of the U-818 series, the projection of the curved Refractolenses is 2⅞". In the case of U-826 it is 2".

Catalog No.	Lamp Wattage	Socket—Supporting Ins. Wing No.	Dimensions—Inches Diam.	Depth	Termination	Net Wt. Each Lb.
U-818	300	4	16	6-3/4	Threaded for 1" pipe on top and back	31
U-818-M	300†	4	16-1/2*	9		37
U-818-S	6000 Lumen series	4	16-1/2*	9		37
U-826	100	4	13-3/8	5-1/2	Threaded for ¾" pipe on top Two 1¼" holes in back	12

† Mogul base lamp.
* Solid cast housing at top 3-1/2" high by 2" wide.
All units have three 1/2" recessed holes in back for mounting.

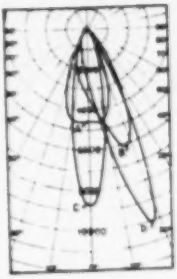
Vibration Resisting, Heavy Duty, Three Piece Controlens Unit

ENGINE TEST CELL



No. TC-763

Airplane engine test cells require an unusual combination of characteristics in lighting units. (1) Extreme vibration conditions require special consideration in the matter of construction. (2) Distance of the observer from the engine makes necessary high illumination at the critical points. (3) Units cannot be placed within the cell; they must be recessed in the walls or ceilings.



At right: Candlepower Distribution No. TC-763 with 500w. 9300 lumen lamp. Unit may be set to provide any of the four light patterns shown or intermediary distributions.

The Holophane test cell unit is made of three separate heavy cast parts: one holding reflector and lamp; another the base which frames the concrete opening; and the third, a face plate which holds the HI-STRESS Controlens and cover glass. The purpose of this construction is to physically separate the face of the unit from the socket and lamp so that the vibration imparted by the air pulsations in the cell will not be readily transmitted to the filament of the lamp. This serves to reduce lamp failures—the most troublesome maintenance item of test cell operation.

The use of the Hi-Stress (high impact and heat resisting) CONTROLENS makes it possible to focus the light where needed on the engine and thereby obtain higher illumination values at critical points than could be produced by a general flood of light.

INSTALLATION has been made easy by furnishing the unit with all cast parts bolted to a soft pine wooden form, which may be set into place when the concrete is poured. This form is later removed, leaving the optical elements in their proper alignment.

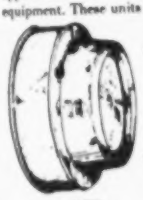
The Holophane Engineering Department will cooperate in preparing specifications for each job, and lamp focus and offset will be set at the factory so that each unit will play its part in producing the desired overall results.

Catalog Number	Lamp Wattage	Dimen. Inches Face Plate	Dimen. Inches Recess. Diam.	Dimen. Inches Recess. Depth	Net Wt. Each Unit.
TC-763	500	17-3/8 sq.	11-3/4		48 lbs.

Booklet on the "Lighting of Engine Test Cells" available on request.

Automobile Test Cell Lighting Units

For test cells where the vibration conditions are not as severe as in the application described above, Holophane has developed a special line of equipment. These units belong to the U-818 group.



No. U-880

TWO TYPES ARE AVAILABLE:—

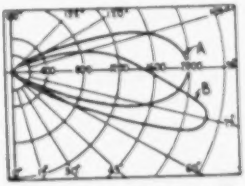
1. For a wide spread of light enveloping the entire cell and not emphasizing the motor or any particular part:

   a. U-818-TC identical with the U-818 except for a special gasket. Uses 200 watt medium base lamp.

   b. U-818-M-TC identical with the U-818-M except for special gasket. Uses 300 watt mogul base lamp.

2. For a concentrating beam unit where it is possible to profocus the light on the motor or on any part thereof:

   U-880, containing a flat Controlens is illustrated at left. Takes 300 watt medium base lamp.



Candlepower Distribution No. U-880 with 200w. 3650 lumen lamp. Curve A represents standard setting; Curve B represents greatest possible offset.

Catalog Number	Lamp Wattage	Distribution	Maximum Spacing	Dimen. Inches Diam.	Dimen. Inches Dpth.	Termination	Net Wt. Each Unit.
U-818-TC	200	Wide Spread	See U-818 Page 38	16	6-3/4	See U-818 Page 38	21 lbs.
U-818-M-TC	300†	Fan Shaped		See U-818-M Page 38			27 lbs.
U-880	300*	Variable Distribution		16	6-7/8		19 lbs.

†Mogul base lamp. *Medium base 8" light center lamp. Wire is not furnished with these units.

HOLOPHANE MASTER CONTROL CHART . . .

HIGH BAYS	JOB CONDITION	SEE PAGE
Mills, (Ferrous and non-ferrous), Foundries, Heavy, Machine Shops, Airplane Assembly Plants, Hangars, Railway Repair Shops, Turbine Rooms, Sports Arenas.	Very great mtg. heights (40' and over)	26
	Mounting heights 25' to 40'	26
	Superlighting over limited area (25' and over)	26
	For mounting on crane	27
	Warehouses (where crane makes high mtg. necessary)	26
	Watchman's circuit	26
LOW BAYS	General lighting (not over 25')	28, 25
Light Mfg. (all kinds)	Non-critical work (low level illumination)	28
Machine Shops,	Precision machinery work	28, 32, 25
Bench Work,	Locations with vapor conditions	30, 31
Textile Mills,	Locations with hazardous dust	30, 31, 24
Paper Mills,	Explosion proof locations (paint spray)	33
Paint & Finishing	Watchman's circuit lighting	36
Shops, Assembly.	Inspection operations	25, 32
	Warehouse (open floor)	36
	Warehouse storage shelves	32
	Garage (storage areas)	36, 28
	Garage—repair shops	25, 28
OUTDOOR LIGHTING	Uniform low level over wide area	34, 35, 38
Yards, Shipping	Fences and roadways	34, 35
Platforms, Property	Passageways and between buildings	34, 35, 38
Fences, Carways,	Sub-station	37
Storage Yards,	Underpasses	38
Substations,	Shipping platforms	38
Parking areas.	Over doors	38
	Outdoor storage	34, 35, 38
SPECIAL INDUSTRIAL APPLICATIONS	Engine test cells	39
	Switchboard & control boards	17
	Blast furnaces	38
	Very fine inspection details	24, 32
	Tobacco grading	24, 32
	Wind tunnels	39

INDEX OF USES

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COMMERCIAL	**Offices**	
	General office space	3, 4, 6, 7, 12
	Executive offices	3, 4, 12, 7
	Drafting rooms	3, 4, 7
	Shop offices	3, 6
	Files	9
	Reception and lobby areas	7, 14, 18, 19
	Stores	
	Ground floors (dep't stores)	4, 12
	General areas—show rooms	3, 4, 5, 6, 12, 14, 18, 19
	Display objects	5, 12
	Long narrow counter arrangement	13
	Show windows	8
	General Utility Areas	
	Washrooms	9
	Cafeterias	6, 7, 14
	Corridors	9, 14, 18, 19
	Store rooms	29
	Kitchens	6, 17
EDUCATIONAL	Recitation rooms	6, 7, 14, 18, 19, 3, 4
	Lecture halls	6, 7, 14, 18, 19, 3, 4
	Laboratories	6, 7, 30, 31, 25
	Study halls (library reading rooms)	7, 14, 3, 4
	Blackboards	17
	Auditoriums	12, 14
	Gymnasiums	9, 14, 18, 19, 26, 28
	Cloak rooms	29
HOSPITALS	Surgeries (major)	20
	Surgeries (minor)	20
	Surgeries (dental)	20
	Examination and first aid rooms	23
	Sick rooms	21, 22
	Psychiatric rooms	22
	Laboratories and pharmaceutical dept.	6, 32, 24, 25
	Corridors	22, 9
SPECIAL ARCHITECTURAL APPLICATIONS	Broadcasting studios	14, 16
	Ecclesiastical	14, 15, 16, 17
	Transportation terminals	14, 15, 18, 19
	Theatrical (other than stage)	14, 15, 17
	Acoustical type tile ceilings	18
	Museums (exclusive of paintings)	14, 15, 18, 19
	Art gallery (mostly paintings)	16, 17
	Banks	4, 6, 7, 12, 14, 17, 18, 19
	Club lounges	7, 12, 14

ILLUMINATION DESIGN DATA

There are two methods in common use for predicting the footcandle values which will be obtained from a proposed lighting system:

1. The Average Flux Method is used to determine the mean illumination over the entire area considered. It is not accurate for any particular point in the area and hence is best employed for a preliminary check. It is, however, the only practical method for use with indirect systems. It cannot be used for asymmetric units.

2. The Point-by-Point Method is used for predicting illumination at any point in an area. This procedure is the most accurate for all forms of direct lighting.

AVERAGE FLUX METHOD

Initial Illumination

The total lamp lumens (F) required to obtain the desired *initial* footcandle illumination (ft-c) are:

$$F = \frac{\text{ft-c} \times A}{K} \qquad (1)$$

where:

A = total floor area which the light will cover —in square feet;

K = Utilization factor for the lighting unit in question.

Maintained Illumination

When it is required to find the total lamp lumens to *continuously maintain* a desired footcandle illumination, it is necessary to include factors to compensate for depreciation of lamp and unit. The formula then becomes:

$$F = \frac{\text{ft-c} \times A}{K \times D \times d} \qquad (2)$$

where:

D = Factor of depreciation due to dust and dirt collection.

d = the average output of light from the lamp throughout its life.

NOTE: Recommended footcandle values are given at end of this section.

K, the utilization factor is the percentage of the light generated by the lamp which reaches the area in question. It depends on the output and distribution of the particular unit, the room index, and the reflection factors of the walls and ceiling.

The *room index* depends on the size and shape of the room, and the mounting height of the units. It may be determined by means of the following formulae:

For *direct* lighting

$$\text{Room index} = \frac{(2 \times \text{width of room}) \times \text{length of room}}{6 \times \text{mounting height above work}}$$

For *indirect* lighting

$$\text{Room index} = \frac{(2 \times \text{width of room}) \times \text{length of room}}{4 \times \text{ceiling height above work}}$$

When this value is obtained we can go into Table I and find the utilization K for the unit in question.

Table I (K)

(For reflection factors — Ceiling 75%; Walls 50%)

HOLOPHANE CATALOG NUMBER	ROOM INDEX 1	1.5	2	3	5
	VALUE FOR "K"				
9101 SERIES (2-LAMP), 9062, 9065	.44	.50	.54	.58	.60
9110 SERIES (2-LAMP)	.40	.45	.49	.52	.54
S-5540, C-5540 C & S-2120 SERIES	.40	.47	.53	.59	.65
CF-200, F200	.27	.34	.39	.46	.53
S-5640	.20	.26	.31	.36	.42
F-1774, F-1748	.35	.40	.42	.46	.48
R-1774, R-2772 R-1748, R-2773	.32	.36	.39	.41	.43
682, 684, 685 615 SERIES	.45	.51	.56	.62	.67
686	.43	.50	.54	.60	.64
06561	.43	.53	.58	.65	.70
02368, 02470 02378, 02328	.36	.42	.47	.53	.59

The average output of a lighting unit is but a fraction of the initial value—due to accumulation of dust and dirt. The extent of this depreciation may be estimated from past records and the probable average output is expressed in the following table, as a percent of the initial.

Table II (D)

Dust and Dirt Depreciation on lamps and Holophane Luminaires. (Cleaning period 1000 burning hours or 4 months.)

Room Condition	MULTIPLYING FACTOR Direct	Semi Direct	Semi Indirect	Indirect
Clean	90	85	80	90
Average	83	80	70	–
Dirty	70	65	–	–

ILLUMINATION DESIGN DATA

The average amount of light which various lamps emit throughout their life (in percent of initial) has been determined by the Lamp Companies, and is indicated in the following table; i.e., multiplying factor:

Table III (d)

Lamp Size Watts	Lumens Initial	Multiplying Factor Depreciation 70% of Life	Light Center Length— Inches
60 I. F.	833	93	3¼
100 I. F.	1630	94	3¼
150 I. F.	2600	91	3¼
200 I. F.	3450	89	6
300 C. or I. F. med.	5900	.88	6
300 C. or I. F. mog.	5650	.89	7
500 I. F. Silver Bowl	8300	.78	7
500 Clear or I. F.	9950	.83	7
500 I. F. Silver Bowl	9250	....	7
750 Clear	13500	.83	9½
750 Bi Post I. F.	14000	....	5½
1000 Clear	21500	.80	9½
1000 Bi Post I. F.	19500	.91	5½
1500 Clear	33,000	.71	9½
400 Mercury	16000	.87	7¾
40 Fluor. 48" (3500° K)	2300	.73*	....
100 Fluor. 60" (3500° K)	4200	.71†	....

*At 2000 hours for a 4000 hour lamp
†At 3100 hours for a 4300 hour lamp

(July, 1946)

When the values of ft-c, A, K, D and d are inserted in formula (2), the total lamp lumens can be computed.

Given: Number of Outlets—To Find Size of Lamp

(1) If the number of lamps to be used is known, divide the total lamp lumens by this number to find the lumen output required per lamp. Table III (d) gives the lumen output for various lamp sizes so that the wattage size of lamp required is the one having the number of lumens nearest the value determined above. It is good practice to select the lamp above rather than below the computed figure.

Given: Size of Lamp To Be Used—To Find Number Required

(2) If, instead of the number of lamps, the size of lamp to be used has been decided upon in advance, divide the total lamp lumens by the lumen output of the lamp selected Table III (d) and the result will be the number of lamps required.

POINT-BY-POINT METHOD

While the first method will give a reasonably accurate indication of the *average* illumination throughout a room, it does not give any clue to the *degree of uniformity* which will exist. In order to determine the illumination values at any particular point within the area, the *point-by-point* method must be employed.

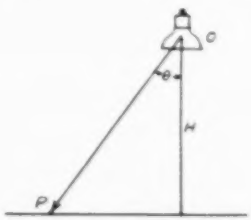
This method of calculating footcandles is based on the inverse square law and Lambert's law, i.e., the illumination at any point varies:

1. Directly as the candlepower from the source in that direction.
2. Inversely as the square of the distance from the source to the point.
3. Directly as the cosine of the angle of incidence of the light.

Expressed as a formula, this becomes:

$$\text{Footcandles (Initial Horizontal)} = \frac{cp \cos^3 \theta}{H^2} \qquad (3)$$

Where H is the height of the light source above the point and cp is the candlepower of the source at angle θ.



The value of the candlepower of a luminaire at any angle may be obtained from the distribution curves accompanying the units throughout the Datalog. Table IV gives the values of the cosine cubed of all angles, for direct substitution in the formula.

When it is desired to find the *average* value of the footcandles which will persist over a period of time, it is necessary, as in the Average Flux Method, to insert factors to compensate for depreciation of lamp and unit.

The formula then becomes:

$$\text{Footcandles (Maintained Horizontal)} = \frac{cp \cos^3 \theta \times D \times d}{H^2} \qquad (4)$$

Where the values of D and d remain the same as in formula (2).

ILLUMINATION DESIGN DATA

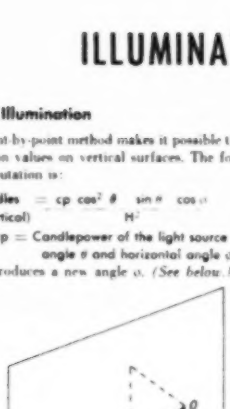
Vertical Illumination

The point-by-point method makes it possible to compute illumination values on vertical surfaces. The formula for such computation is:

$$\text{Footcandles (Initial Vertical)} = \frac{cp \cos^2\theta \sin\theta \cos\phi}{H^2} \qquad (5)$$

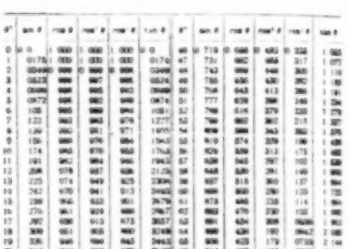
where, cp = Candlepower of the light source at vertical angle θ and horizontal angle ϕ

This introduces a new angle ϕ. *(See below.)*



"Maintained" values may be derived by adding D and d to the formula as in the case of (4).

Table IV



A Guide to "In-service" and "Maintained" Footcandle Values

The following footcandle values are offered as a guide to modern practice. In using these tables, it must be realized that no **absolute** value can be assigned to any seeing task which will be correct for every person who will make use of the lighting.

These values are the **mean** of a number of installations which have proved satisfactory, and with the proper lighting equipment, should provide lighting levels under which persons with average sight may work efficiently or move about safely. It must be borne in mind, that there is more than **amount** of illumination in the concept of good lighting, and that the factors of glare and surrounding brightness play a part which should not be ignored.

A range of 50%, plus or minus, from the values given is permissible and even desirable under certain definite conditions involving variations in the color of the objects viewed the size of detail and contrast with the background. For example, the determining factor in the lighting of machine tool operations in high bay areas is not the size or bulk of the casting worked on, but the tolerances within which the machining is done, and the conditions under which the gauges must be read.

In the case of merchandising lighting, it is the brightness of the display which compels attention and, as such, becomes the governing factor in deciding the amount of illumination to be provided. For equal attraction power, therefore, dark colored merchandise requires more illumination than lighter materials, and the values at the higher end of the range should be used. In general, the progressive merchant recognizes that the small extra cost of the higher illumination levels more than pays for itself in greater attraction, larger sales and increased prestige.

INDUSTRIAL

("Maintained" Footcandle Values Found Satisfactory in Modern Practice)

General Recommendations

		FOOTCANDLES
Assembly, Inspection and Testing		
Coarse		15
Medium		25
Fine		50
Sorting		
Rough		10
Medium		20
Fine		50
Metal and Woodworking		
Rough bench and machine work		20
Medium work and automatic machines		30
Working to close tolerances		50
Storage (Freight and Warehouses)		
Rough, Bulk or Dead		2
Individual small items		10
Stock Bins	(vertical)	15
Storage Yards		0.5
Packing, Boxing, Shipping and Receiving		10
Parking Yards		0.5
Watchman's Gate		1

Individual Industries

Airplane Hangars — Servicing		30
Foundries		
Core and Mold making		30
Pouring		10
Paint Shops		
Dipping and Spraying		20
Hand Painting and Finishing		40
Paper Mills		
Machine Room — Wet end		20
Between rollers		10
Take off		20
Power Plants		
Turbine and Equipment Rooms		25
Control Boards	(vertical)	30
Boiler Rooms, Coal and Ash Pits		5
Railroad Shops and Facilities		
(See Railroad Specific for detailed recommendations)		
Steel Mills		
(See Steel Mill Specific for detailed recommendations)		

NON-INDUSTRIAL

General—for All Classifications:

	FOOTCANDLES
Auditoriums	
Assembly	10
Exhibitions	25
Corridors and Stairs	5
Drafting Rooms	60
Entrance Halls	10
Offices (Prolonged close work)	40
Offices (Intermittent reading and writing)	30
Waiting Rooms	15
Wash Rooms and Toilets	10

Buildings Frequented by General Public:

Armories		
Routine drill		15
Exhibitions or shows		25
Banks—Depositor Space		20
Bowling Alleys — alleys		10
Pin pits	(vertical)	25
Broadcasting Studios		25
Libraries—Reading Room		30
Stack Room	(vertical)	5
Sport Arenas—Tournament Competition		75
Transportation Facilities—(See Railroad Specific for detailed recommendations)		

Hospitals: (See Lighting for the Hospital of Today for detailed recommendations)

Schools and Colleges:

Blackboards	(vertical)	30
Laboratories		30
Lecture Halls		30
Physical Training Areas		
Grade and High School Competition		30
College Competitive Sports		75
Recitation Rooms		30
Sight-Saving Class Rooms		50
Study Halls		30

Stores and Show Rooms:

Customer Traffic Areas	15
Display Areas	40
Special Sales Items	150

Show Windows:

Main Business District—Cities	150
Suburban and Small Towns	75

ILLUMINATION DESIGN DATA

Vertical Illumination

The point-by-point method makes it possible to compute illumination values on vertical surfaces. The formula for such computation is:

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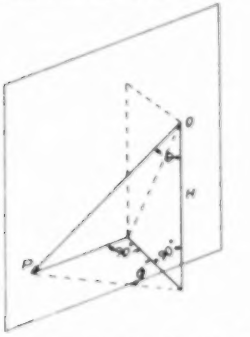

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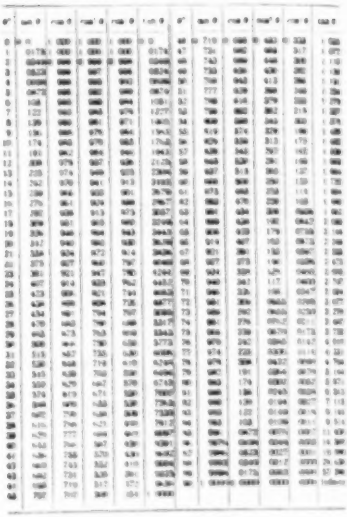

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Fine		50
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Medium		20
Fine		50
Metal and Woodworking		
Rough bench and machine work		20
Medium work and automatic machines		30
Working to close tolerances		50
Storage (Freight and Warehouses		
Rough, Bulk or Dead		2
Individual small items		10
Stock Bins	(vertical)	15
Storage Yards		0.5
Packing, Boxing, Shipping and Receiving		10
Parking Yards		0.5
Watchman's Clock		1

Individual Industries

Airplane Hangars — Servicing		30
Foundries		
Core and Mold making		20
Pouring		10
Paint Shops		
Dipping and Spraying		20
Hand Painting and Finishing		40
Paper Mills		
Machine Room — Wet end		20
Between rollers		10
Take off		20
Power Plants		
Turbine and Equipment Rooms		20
Control Boards	(vertical)	30
Boiler Rooms, Coal and Ash Pits		5
Railroad Shops and Facilities		
(See Railroad Specific for detailed recommendations)		
Steel Mills		
(See Steel Mill Specific for detailed recommendations)		

General—for All Classifications:

		FOOTCANDLES
Auditoriums		
Assembly		10
Exhibitions		20
Corridors and Stairs		5
Drafting Rooms		60
Entrance Halls		10
Offices (Prolonged close work		40
Offices (Intermittent reading and writing		30
Waiting Rooms		15
Wash Rooms and Toilets		10

Buildings Frequented by General Public:

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Exhibitions or shows		25
Banks—Depositor Space		20
Bowling Alleys — alleys		10
Pin pits	(vertical)	25
Broadcasting Studios		25
Libraries—Reading Room		30
Stack Room	(vertical)	5
Sport Arenas—Tournament Competition		75
Transportation Facilities—(See Railroad Specific for detailed recommendations)		

Hospitals: See Lighting for the Hospital of Today for detailed recommendations

Schools and Colleges:

Blackboards	(vertical)	30
Laboratories		30
Lecture Halls		20
Physical Training Areas		
Grade and High School Competition		30
College Competitive Sports		75
Recitation Rooms		30
Sight-Saving Class Rooms		30
Study Halls		30

Stores and Show Rooms:

Customer Traffic Areas		15
Display Areas		40
Special Sales Items		150

Show Windows:

Main Business District—Cities		150
Suburban and Small Towns		75

PRICE INDEX

Prices in Effect January 1, 1947

*(Units for use with **Incandescent** and **Mercury** Lamps)*

Catalog Number	Consumer's Net Price	Std. Qty.	Shp. Wt. Lbs. (lbs.)	Page No.
A-739-60	19.70	1	14	22
A-739-100	19.70	1	14	22
A-739-150	19.70	1	14	22
A-765	24.65	1	21	22
B-606	4.15	1	8	9
B-615	5.75	1	8	9
C-2120	8.00	8	7	6
C-2130	12.70	4	12	6
C-2133	12.70	1	12	6
C-2140-6"	17.50	4	18	6
C-2143-6"	17.50	1	18	6
C-2170	8.35	8	7	6
C-2172	8.35	8	7	9
C-5540	16.00	8	19	6
C-7346	31.35	1	23	21
CF-200	16.20	1	20	7
CSI-100	2.30	1	3	—
D-729-L	23.55	1	15	20
D-729-T	23.55	1	13	20
E-732	12.45	1	10	17
E-790	13.90	1	10	17
E-790-2	30.70	1	20	17
E-796	12.45	1	10	17
E-796-2	17.80	1	20	17
E-1814	33.10	4	30	15
F-200	17.60	1	20	7
F-790	14.50	1	15	17
F-790-2	29.30	1	28	17
F-796	13.05	6	15	17
F-796-2	26.40	1	28	17
F-1722	13.40	1	10	17
F-1732	14.05	1	15	17
F-1739	19.70	1	21	16
F-1748	19.70	8	23	15
F-1765	24.65	1	34	16

Catalog Number	Consumer's Net Price	Std. Qty.	Shp. Wt. Lbs. (lbs.)	Page No.
F-1765-SB	— **	1	39	33
F-1765-2	47.80	1	75	16
F-1765-3	— **	1	108	16
F-1765-45	— **	1	120	16
F-1774	24.65	8	38	15
F-1774-SB	— **	1	39	33
F-1774-2	47.80	1	74	15
F-1774-2M	— **	1	72	13
F-1774-3	— **	1	112	15
F-1774-3M	— **	1	101	13
F-1774-45	— **	1	138	15
F-1774-45M	— **	1	135	13
F-1778-M	32.60	1	40	13
F-1814	28.20	4	32	13
FD-1774	59.00	1	48	13
FD-1774-2	67.10	1	78	13
FD-1774-2M	69.35	1	80	13
FD-1774-3	— **	1	110	13
FD-1774-3M	— **	1	112	13
FD-1774-45	— **	1	150	13
FD-1774-45M	— **	1	155	13
FD-1778-M	63.50	1	50	13
H-755-FL	— **	1	30	20
H-755-TF	— **	1	40	20
H-2076	5.40	1	7	31
R-606	5.90	1	8	—
R-615	7.20	1	8	—
R-682	13.50	1	15	9
R-685	13.50	1	15	9
R-686	13.50	1	15	9
R-690-AL	35.80	1	48	—
R-691-AL	35.80	1	48	—
R-692-AL	35.80	1	48	—
R-1748	16.70	8	20	18
R-1774	21.35	8	30	18
R-1894	22.05	8	17	19
R-2130	9.00	8	10	19

**Prices on application

All prices f.o.b. the factory

Material will be billed at the price in effect at time of shipment.

PRICE INDEX

Prices in Effect January 1, 1947

*(Units for use with **Incandescent** and **Mercury** Lamps)*

Catalog Number	Consumer's Net Price	Std Qty	Ship. Wt. Ea. (lbs.)	Page No.
R-2130	15.45	4	14	19
R-2140-6"	20.10	1	20	19
R-2470	11.55	1	13	19
R-2472	11.55	1	13	19
R-2476	11.55	1	13	19
R-2772	21.30	1	20	18
R-2773	18.15	1	20	18
R-5544	23.70	8	26	19
S-2120	10.00	8	9	6
S-2130	14.10	4	13	6
S-2133	14.10	1	13	6
S-2140-6"	19.00	4	18	6
S-2143-6"	19.00	1	18	6
S-2170	9.75	8	9	6
S-2172	9.75	8	9	—
S-5540	17.10	8	20	6
S-5630	17.10	8	20	7
S-5640	17.10	8	20	7
S-5745	— **	1	40	33
S-7340	22.55	1	25	21
TC-765	— **	1	64	39
U-818	36.00	1	26	38
U-818-M	— **	1	33	38
U-818-M-TC	— **	1	33	39
U-818-S	— **	1	34	38
U-818-TC	36.85	1	26	39
U-826	26.10	1	17	38
U-880	— **	1	28	39
W-792	14.20	1	6	22
0182	4.20	1	4	—
0916	4.20	1	2	9
0201	1.55	8	2	8
0359	1.55	8	2	—
0700	2.60	8	2	8
0701	1.55	8	2	8
0869	10.65	1	6	37
0871	10.65	1	6	37
0871-CA	3.50	1	3	37
0918	2.60	8	6	37
02076	4.20	8	6	9
02180-S	11.40	1	13	32
02328-D	8.45	8	8	31
02328-V	8.45	8	8	31
02338-D	11.50	1	10	31
02338-V	11.50	1	10	31
02368-D	10.45	8	14	31
02368-V	10.45	8	14	31
02378-D	12.35	8	17	31
02378-V	12.35	8	17	31
02470-BC	6.85	1	10	32
02470-D	8.80	1	10	31
02470-V	8.80	1	10	31
02472-BC	6.85	1	10	32
02472-D	8.80	1	10	31
02472-V	8.80	1	10	31
02476-BC	6.85	1	9	32
02476-V	8.80	1	10	31
02480-D	16.95	4	13	31
02480-V	16.95	4	13	31
02490-S	12.95	1	16	32
04179-VF	31.25	1	34	33
04333-VF	29.25	1	32	35
04338	21.90	1	17	35
04377	23.45	1	18	33
04358	42.25	1	45	36
06553-D	— **	1	18	31
06553-V	— **	1	18	31
06561-D	21.75	1	21	31
06561-V	21.75	1	21	31
043386	32.65	1	33	37
043776	34.20	1	32	37
606	3.80	12	3	39
606-BC	3.80	12	3	39
615	5.20	12	7	39
615-BC	5.20	12	7	39
645	10.25	8	14	39
645-AL	12.60	8	15	39
674	38.35	1	36	37
681-AL	17.75	1	22	36

**Prices on application

All prices f.o.b. the factory

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PRICE INDEX

Prices in Effect January 1, 1947

(Units for use with *Incandescent* and *Mercury* Lamps)

Catalog Number	Consumer's Net Price	Std. Qty.	Ship. Wt. Ea. (lbs.)	Page No.
682	8.00	8	12	29
682-AL	10.35	8	12	29
682-B	9.00	8	12	29
682-B-AL	11.35	8	12	29
684	6.00	8	8	29
684-AL	8.20	8	8	29
685	8.00	8	12	29
685-AL	10.35	8	12	29
685-B	9.00	8	12	29
685-B-AL	11.35	8	12	29
686	8.00	8	12	29
686-AL	10.35	8	12	29
686-B	9.00	8	12	29
686-B-AL	11.35	8	12	29
690-AL	31.50	4	43	26
691-AL	31.50	4	31	26
691-AL-VP	— **	1	35	26
692-AL	31.50	4	32	26
693-AL	31.50	4	43	26
694	44.50	1	56	27
830	7.15	12	6	36
830-D	12.45	1	10	31
832	8.55	8	9	36
832-D	17.20	1	12	31
915	6.60	8	9	8
940	4.35	8	5	8
983	2.70	1	3	8
990	29.50	1	42	—
991	29.50	1	29	—
992	29.50	1	32	—
993	29.50	1	42	—
4040	34.05	1	33	27
4040-AL	38.75	1	34	27
4050	34.05	1	33	27
4050-AL	38.75	1	34	27
5025	34.05	1	33	27
5025-AL	38.75	1	34	27
5050	34.05	1	33	27
5050-AL	38.75	1	34	27

(HOLOFLUX units and accessories for use with *Fluorescent* lamps)

Catalog Number	Consumer's Net Price	Std. Qty.	Ship. Wt. Ea. (lbs.)	Page No.
BR-10	1.90 (pair)	1	1	4
I-778-E*	51.10	1	35	5
I-778-I*	51.10	1	38	5
I-1774-E*	42.95	1	36	5
I-1774-I*	42.95	1	37	5
MI-94	1.40	1	3	4
MI-127	3.15	1	3	4
9061	73.20	1	89	24
9062	68.40	1	86	24
9063	39.40	1	66	23
9066	44.20	1	69	23
9101-S	46.90	1	67	4
9102-S	51.70	1	67	4
9104-S	103.40	1	134	4
9106-S	38.40	1	37	4
9107-S	44.30	1	39	4
9108-S	81.70	1	67	4
9110	66.70	1	74	3
9111	71.50	1	78	3

*Incandescent inserts for use in combination with Fluorescent.

**Prices on application

All prices f.o.b. the factory *Material will be billed at the price in effect at time of shipment.*

HOLOPHANE ENGINEERING SERVICE IS AVAILABLE TO MAKE RECOMMENDATIONS AND TO DRAW SPECIFICATIONS FOR ANY LIGHTING PROJECT. THERE ARE FIELD ENGINEERS LOCATED STRATEGICALLY FOR ON-THE-JOB AVAILABILITY ANYWHERE IN THE UNITED STATES. SUPPORTING THEM IS A COMPETENT APPLICATION ENGINEERING STAFF IN THE NEW YORK HEADQUARTERS. THIS COMPLETE SERVICE IS OFFERED WITHOUT CHARGE OR OBLIGATION TO ASSIST ENGINEERS AND ARCHITECTS IN THE PROPER SOLUTION OF THEIR LIGHTING PROBLEMS.

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Government's Exhibit 31

★ ADVANCED STREET LIGHTING ★ PRACTICE

HOLOPHANE

HOLOPHANE STREET LIGHTING

★ ★

For forty years Holophane has pioneered in developing street lighting as a *science*. From the very beginning this guiding principle has acted as an ever present reminder of Holophane obligation to provide a service value not to be exceeded, a service value fully worthy of the name it carries. An earlier booklet outlined this principle; it is reprinted here as an additional pledge of continuance.

"SCIENTIFIC" properly designates that which has been reduced to a system of exact knowledge.

SCIENTIFIC practice is the very opposite of all guesswork, of all blind imitation of past practice, of all cut-and-try methods.

SCIENTIFIC street lighting begins with a basic understanding of present-day social conditions and of the direction in which these are changing: it proceeds guided by a sound analysis of its problem: it accomplishes its results by exact knowledge in the design and use of street lighting equipment.

GOOD street lighting can, it is true, be provided under unscientific practice; but the price of that unscientific practice is excessive cost.

SCIENTIFIC street lighting insures maximum service results per dollar expended. Furthermore, the installation based on truly scientific principles of practice will not be made out-of-date by the developments of many years.

THE term scientific, truly deserved, honestly earned, is to practice what character is to human relationship: it is a guarantee of reliability.

This principle has not been lightly adopted. It has been adopted with a deep and abiding realization that it constitutes a pledge of our commercial honor.

★ ★

HOLOPHANE COMPANY, INC.
342 MADISON AVENUE NEW YORK CITY
Works: NEWARK, OHIO

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★ ADVANCED STREET LIGHTING ★ PRACTICE

BOOKLET NO. 1150

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A Guide to Sound
Street Illumination
Procedure and Materials
Prepared by the Street
Lighting Department of

HOLOPHANE COMPANY, Inc.
342 Madison Avenue New York City
★ *Street Lighting Department* • NEWARK, OHIO

In Canada: Holophane Co., Ltd.
385 Yonge Street • Toronto

Foreword

VISION is perhaps the most valuable of all human senses, and the relationship between light and vision one of the most complicated of studies. The Illuminating Engineer, who by correct application of the science of Illuminating Engineering protects and aids human vision, accordingly contributes a service to human welfare that is difficult to evaluate.

In street lighting this service takes the form of adding to the comfort and convenience of all mankind, and the humanitarian aspect of protecting life and happiness. Street Lighting service of today has advanced a long way from the torch lighting of the Middle Ages. It now can be made to contribute in full measure to the enjoyment of life during the hours of darkness.

This booklet is prepared for the guidance of and assistance to those charged with the responsibility of providing street lighting service. Involved technical discussion has been avoided as far as possible in the endeavor to make the booklet of service to the non-technical man, as well as to the engineer.

Each of the arts and sciences has a vocabulary of terms peculiar to itself. To assist the layman unfamiliar with these terms the first section is devoted to a brief explanation of Illuminating Engineering terms and Fundamentals. It is hoped that this foundation will make more interesting the discussion of modern street lighting practices.

The name of Holophane stands not for a product alone, but for a service made possible by a product. Forty years of progress in the field of illumination has been based on a full and abiding faith in and unalloyed devotion to the philosophy,

★ ★ ★

HE PROFITS MOST WHO SERVES BEST

STREET LIGHTING—A CIVIC NECESSITY

For many years street lighting was considered primarily as a civic need for advertising and trade attraction in the business district areas, and as a crime preventive in outlying areas. Changing social-habits, the automobile, increased night travel, and changes in our transportation methods have today made street lighting more than a need. Today adequate street lighting is a necessity, a requirement essential to protect the lives, property and welfare of the entire community.

In what manner do these changes make street lighting a necessity? Leading importance is given to the aspect of safety. Factual data has proved that the increasing toll of lives and property damages from vehicular collision on public streets is definitely traceable to lack of vision. To see there must be illumination. Illumination at night can be provided efficiently only by a properly designed and operated street lighting system of fixed light sources. Protection to vehicle drivers and pedestrians is a municipal responsibility and as such makes adequate street lighting a municipal necessity.

In addition to providing safety, street lighting provides convenience in the use of streets, imparts a cheerful atmosphere to commercial areas, deters criminal practices, evidences prosperity and progress, attracts trade and industry and adds to the effectiveness of fire and police protection. These benefits and the added one of Safety make street lighting a necessity which pays its own cost in direct and tangible ways.

TRENDS OF STREET LIGHTING PRACTICE

As civilization progresses in a social sense, as transportation methods advance with respect to speed and convenience in methods of travel, as communities develop and progress industrially, so must those services necessary to these changing conditions advance. The advance in street lighting service has come in part from increased engineering knowledge resulting in improved technique in luminaire design and application, in part from the design and development of improved light sources of increased efficiency, and in part from a public acceptance of the need of providing lighting systems adequate to provide full measure of safety.

Increased engineering knowledge in street lighting technique has brought about increases in the mounting heights of luminaires above street surfaces in order to illuminate these surfaces with the least amount of adverse effects. Increased engineering knowledge has resulted in the design of more effective luminaires with efficient Holophane Refractors which permit the use of these high mounting heights without sacrifice in light delivery to useful areas. Improvements in the efficiency of light sources has resulted in obtaining increased illumination intensities at expenditures within reasonable economical limits. This trend toward more efficient light generation, more efficient light utilization, and higher standards of illumination intensity has proved to municipal authorities and to the public that advances in the art of street lighting have made our communities more attractive, more prosperous, more convenient, and more safe places in which to live.

FUNDAMENTALS OF ILLUMINATION

The engineering data herein given in brief form cover only the fundamentals which are useful in arriving at knowledge of street lighting performance. These data will provide the information for computing illumination and for making performance comparisons.

ILLUMINATION TERMS

LIGHT—For the purposes of illuminating engineering, light is radiant energy evaluated according to its capacity to produce visible sensation.

FLUX—Luminous flux is the time rate of flow of light. Light is a flow of energy corresponding to a watt in electrical parlance, quarts of water per second, etc. A constant sensation of light is produced by a continuous flow of light energy. Illuminating engineering concerns itself with the visual effect of light flux and so measures it in terms of visual sensation.

CANDLEPOWER—The candle is the unit of luminous intensity. In illumination practice the word candle refers to the International Candle. Candlepower itself is luminous intensity expressed in candles.

LUMEN—The lumen is the unit of luminous flux. It differs from the candle or footcandle in that it takes account of the extent of space or area over which the light is distributed. Whether representing light sent out by a source or received by a surface, a lumen represents the same amount of light. One lumen will light one square foot of surface to an illumination intensity of one footcandle.

FOOTCANDLE—The footcandle is the unit of illumination. It is the illumination obtained on a surface one foot distant from a light source of one candlepower when the surface is perpendicular to the light ray.

SPECULAR—Specular is used to describe a surface which will reflect light in such manner that when a ray of light strikes the surface it will be reflected in such a direction that a perpendicular to the surface at the point of reflection will bisect the angle formed by the incident and reflected rays. The light reflected from a smooth polished surface is reflected in accordance with this characteristic.

GLINT—Glint is the specular reflection of light from polished or wet surfaces. Frequently the image of the light source is evident. In street lighting the identification of objects and their location is sometimes assisted by the presence of glint.

BRIGHTNESS—Any object emitting or reflecting light is said to be bright, and, through the fact of its brightness, is visible. Brightness is independent of distance which means that no matter at what distance from a light source an observer may be, it will appear always of the same brightness. The average brightness of any reflecting surface is the product of the illumination in foot-candles by the reflection factor of the surface. The reflection factor, and accordingly the brightness, of any surface containing an element of specularity is affected by the angle of incidence of the light and the angle from which the surface is viewed.

SYMMETRIC—A symmetric light distribution is one in which the curves of vertical distribution are substantially the same for all planes. Looking down from above the light distribution is circular.

ASYMMETRIC—An asymmetric light distribution is one in which the curves of vertical distribution are not the same for all planes. Looking down from above the light distribution is irregular, patterned to fit the area to which it is applied.

REFRACTION—Refraction is the bending of a light ray that occurs when leaving one medium of certain density to enter another of greater or lesser density.

REFRACTOR—A refractor is a light control device which redirects the light of a lamp in desired directions, principally by refraction.

MOUNTING HEIGHT—In street lighting mounting height is the perpendicular distance between street grade and the center of the light source in the luminaire.

SPACING—Spacing is the distance between two adjacent luminaires measured along the longitudinal center line of the street. Luminaires approximately opposite each other are not to be considered as adjacent units with respect to spacing.

SPACING-HEIGHT RATIO — A term used to define the ratio between mounting height and spacing and is obtained by dividing the spacing in feet by the height in feet.

LIGHT CONTROL BY REFRACTION

A ray of light leaving a medium of one density and entering a medium of another density changes its direction and makes two angles with the perpendicular to the point where this ray changes from the one medium to the other. The law of refraction states that the sine of the angle of refraction is equal to the sine of the angle of incidence multiplied by a factor which is determined by the relative refractive indices or the relative optical densities of the two media.

The law of refraction is illustrated in Figure 1.

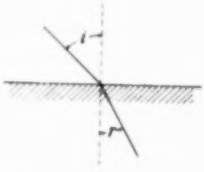


Fig. 1—Refraction of Light Ray

It is expressed by the formula:

$$\text{Sin } r = \text{Sin } i \cdot \frac{n_1}{n_2}$$

in which i is the angle which the incident light ray makes with the normal to the surface and r is the angle which the refracted light ray makes with the normal, while n_1 is the refractive index of the first medium and n_2 is the refractive index of the second medium. When the first medium is air whose relative index is 1.00 (approximately) the formula becomes

$$\text{Sin } r = \frac{\text{Sin } i}{n}$$

n being the refractive index of the medium into which the light passes from the air.

ISO-CANDLE CURVES

For convenience in plotting photometric data there is established a 0° point for vertical angles and a 0° point for lateral angles.

The conventional 0° point for the vertical is at nadir or direction directly downward from the light source. The 180° point is at zenith or direction directly upward.

For lateral angles the conventional 0° point is directly across the street. For example, with a luminaire mounted at the curb line 0° is directly across the street, 90° is the curb line and 180° is directly away from the street toward the property.

ISO-CANDLE CURVES—Continued

Candle power distribution data on an asymmetric luminaire may be conveniently shown in the form of an Iso-candle curve. This is the plotting of the distribution data on the surface of a sphere centered on the luminaire. This sphere is ruled off in degrees of longitude and latitude like the globe of the world, and it is then an easy matter to plot on the sphere the light received by each section.

Asymmetric luminaires for street lighting usually distribute the light in the same manner on the opposite sides of some vertical plane. For example, in a Holophane Retractor the distribution is the same on each side of a vertical plane passing through the center of the refractor and at right angles to the direction of the street. Therefore, the candlepower intensity need be plotted only on one side of this vertical plane to give a full picture of the light distribution. Instead of using a complete sphere, a hemisphere may be used. On this hemisphere, Figure 2, a curve can be drawn for the points illuminated by 100 candlepower, another for points illuminated by 200 candlepower, etc. These curves are Iso-candle Lines. "Iso" is the term used to indicate "equal to" or "the same as"; candle is used to indicate light radiation, and the combination of the two describes the curve as joining points of equal candle intensity.

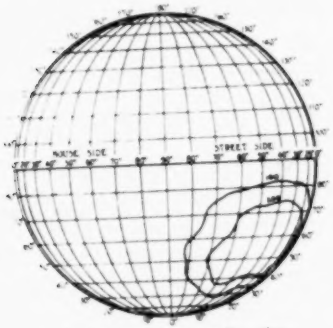


Fig. 2 Iso-candle Plotting on Hemisphere

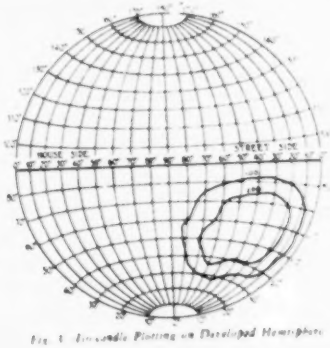


Fig. 3 Iso-candle Plotting on Developed Hemisphere

Iso-candle diagram projection developed from a hemispherical surface of this character may be one of several types. To be most useful the projection must be such that flux summation is possible. This requires that all divisions between the lines of latitude are equal and all the divisions between the lines of longitude are equal for any degree of latitude. Such a diagram is shown in Figure 3.

This diagram permits easy determination of candle power value for any vertical angle through any lateral angle, and ready flux summation. "Street lines" may be plotted on this diagram with a straight edge to permit judgment of the effectiveness of the light distribution.

CALCULATION OF ILLUMINATION

Horizontal illumination is an important factor in street lighting and is computed from the diagram shown in Figure 4. The horizontal illumination in footcandles is equal to candlepower times the cosine of the angle "A" cubed, divided by the vertical height "h" squared.

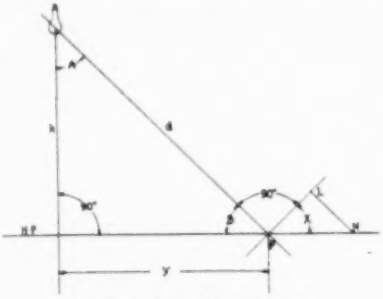


Fig. 4—Diagram for calculation of illumination

That is:

$$I_h = \frac{cp \times \cos^3 A}{h^2}$$

When

I_h = Horizontal Illumination at P
cp = Candlepower
h = Mounting height
A = Vertical angle from nadir

For the calculation for vertical intensity or the illumination on a vertical plane, the following equation is developed:

$$I_v = \frac{cp \times \cos^2 A}{h^2} \times \sin A$$

In street lighting, however, it has been shown by experience that when uniform horizontal illumination is provided, with luminaires at proper spacings and heights, the vertical illumination is invariably satisfactory.

ISOLUX CHARTS

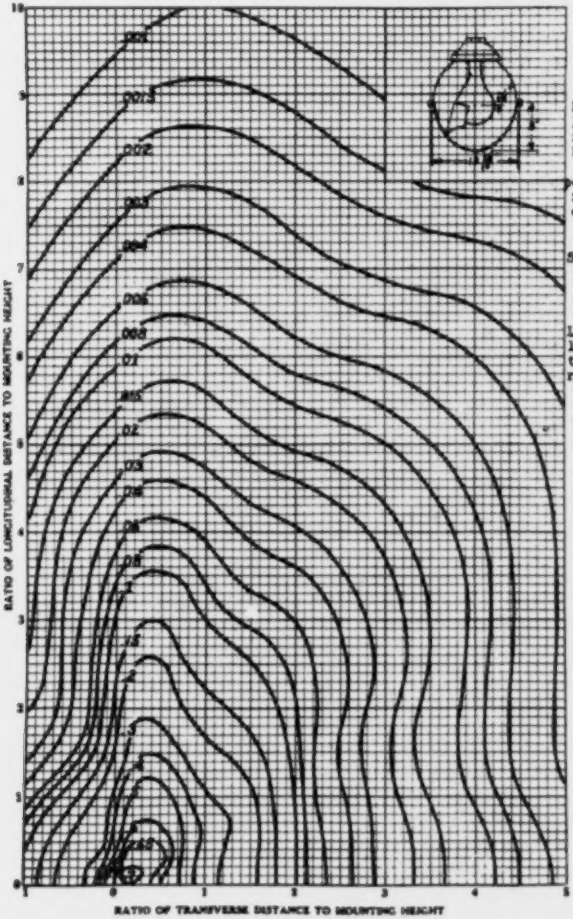
The distribution of illumination over the street surface may be plotted on a chart in the form of "iso-lines of illumination" or lines of illumination of equal intensity. Through each lateral angle points of equal intensity are determined to be at a given distance from the luminaire. A line drawn connecting all points of the same intensity is an "iso-line." The completed chart is commonly called an Isolux Chart.

In a typical chart, Figure 5, the intensities are plotted for a given mounting height. The vertical scale is determined as a ratio between longitudinal distance and mounting height. The horizontal scale is determined as a ratio between transverse distance and mounting height. It is possible to lay out a street of a given width on this chart, with the zero point on the chart the location of the luminaire, and determine by direct reading or interpolation the illumination intensity provided over the street surface by a single luminaire. Intensity from a given system or installation may be determined by adding at each point selected the intensities contributed at that point by all luminaires in the system.

The chart is plotted for only one side of the axis of symmetry as the other side of this axis will have exactly similar characteristics.

Isolux charts may be used for computing the illumination delivered by the luminaire at different mounting heights by applying to the illumination values the factor derived from dividing the height squared for which chart was computed by the new height squared.

$$\frac{(\text{chart } h)^2}{(\text{new } h)^2}$$



ISOLUX CHART

EQUIPMENT
HOLOPHANE lateral refractor No. 4114-VF with polished Alzak reflector and deflector.

LAMP Marda 9C" Street Series
GENERATED LUMENS 6000
LAMP POSITION
Light center 1/8" below top of refractor.
MAX. CP AT 75°
ILLUMINATION AT MOUNTING HEIGHT OF 25 ft.

TEST No. 13648
DATE 4-4-38
FIG. BY AWM
APPR BY SRW
DATE 6-29-38

CORRECTION FACTORS

For illumination results given by this luminaire at other mounting heights multiply by factor

Height	Factor
18	1.93
19	1.73
20	1.56
21	1.42
22	1.29
	1.18
24	1.08
25	1.00
26	0.93
28	90
30	.80
32	0.63
34	0.56
36	0.51

HOLOPHANE CO. Inc.
660 Madison Ave. New York

Fig. 5—Isolux Chart.

EFFICIENCY

The term "efficiency" is often misused and accordingly leads to misleading assumptions. Output is called "efficiency" or "output efficiency" but inasmuch as we are interested only in the amount of light reaching useful areas, output should not be termed "efficiency." Efficiency is correctly the amount of light useful in proportion to the amount of light generated. Great care should be exercised in determining the effectiveness of a luminaire solely on efficiency as other factors tend to make such determination misleading.

Output is determined by the formula

$$\text{Output} = \frac{\text{Output Lumens}}{\text{Input Lumens}}$$

Lumens may be obtained from photometric data and the total number of lumens emitted determined. This value divided by the total lumens of the lamp will give output in per cent of total light generated.

This is not a true guide. The effectiveness of a luminaire is determined by the amount of light delivered to useful areas, and not by the total output. The amount of light delivered to useful areas divided by the total amount generated is called utilization efficiency and is obtained by the formula

$$\text{Utilization Efficiency} = \frac{\text{Effective Lumens}}{\text{Generated Lumens}}$$

Effective lumens may be determined by multiplying the average illumination intensity in foot-candles incident on useful area by the area in square feet. Since one lumen is the flux required to illuminate to an intensity of one foot-candle a surface one foot square it is obvious that the formula

$$\text{Effective Lumens} = \text{Ave. Foot-candles} \times \text{Square feet}$$

may be used. The amount of light confined to useful areas can be readily determined and this amount in per cent of generated light is the true guide in luminaire efficiency.

It should be noted that even utilization efficiency is not the sole guide to follow to determine the effectiveness. The uniformity of the distribution of the light, that is the ratio between maximum intensity and minimum intensity, is an important factor and must not be overlooked.

As lumens may be obtained from illumination intensity times area in square feet it follows that if lumens delivered to an area are known the average illumination over that area may be determined. For convenience a chart of utilization efficiency, Figure 6, may be prepared for a luminaire and from this chart average intensity for a given installation computed. This is computed with the formula

$$\text{Average Foot-candles} = \frac{\text{Effective Lumens}}{\text{Spacing} \times \text{Street Width}}$$

UTILIZATION EFFICIENCY CHART

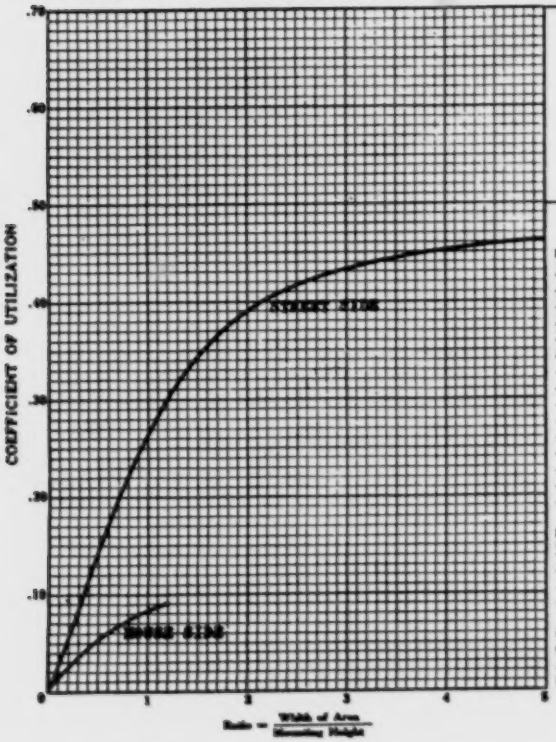
STREET LUMINAIRES

UTILIZATION FACTOR FOR EFFECTIVE LUMEN DELIVERY ON STREET AREA

EFFECTIVE LUMENS = COEFFICIENT OF UTILIZATION X BARE LAMP LUMENS

$$\text{Ave. f.c on Area} = \frac{\text{Effective Lumens}}{\text{Spacing}^* \times \text{Width of Area}}$$

*Spacing is measured along centerline of street. Where luminaries are opposite, double effective lumens value.



EQUIPMENT
HOLOPHANE
lateral refractor
No. 4114-VF with
polished Alzak
reflector and
deflector.

DATA FROM
Test No. 13845
Isolux No. 9676

FIG. BY AMM
CHK. BY ARM
APPR. BY GRW
DATE 6-29-38

Fig. 6—Utilization Efficiency Chart.

STREET LIGHTING SYSTEM CLASSIFICATION

Well-engineered street lighting systems require that the streets of the city be classified in accordance with their lighting requirements. It is obvious that a narrow residential street in an outlying area carrying light vehicular traffic does not require as high a standard of lighting service as does a wide thoroughfare carrying heavy vehicular traffic from the business area to the outlying section. It is equally obvious that the business area should be treated differently from the thoroughfare with more consideration given to the advertising value of the lighting system in this area from the standpoint of trade attraction.

The Street Lighting Committee of the Illuminating Engineering Society has outlined these classifications:

Business Districts
Heavy Traffic Thoroughfares
Medium Traffic Thoroughfares
Light Traffic Thoroughfares
Residence Streets—Non-thoroughfares
Alleys
Highways

Every street in a city should be classified in one of these divisions and should be lighted to the minimum value required for such classifications. Only by following such a program with extensions or improvements in the lighting system made in accordance with the street requirements can fully adequate service value with economy be obtained.

Highway Lighting is a distinct need to provide adequate vision for the speed of modern traffic. It has been proved definitely that such lighting will increase highway safety and decrease the present enormous toll in fatal accidents and property damage.

Highway Lighting differs somewhat from city street lighting because vision is almost wholly by silhouette. It should be considered, however, as a part of any well-rounded plan for lighting improvement.

METHODS OF DISCERNMENT

Vision is a complicated phenomenon, both physiological and psychological, with many external factors affecting one or the other. It is necessary to consider how objects are seen in order to appreciate the need for adequate light sources properly located with respect to the line of vision, and distributing the light properly to provide ease of vision.

Fig. 7. Illustrating Surface Detail

Fig. 8. Illustrating Silhouette

The principal effects by which we discern an object are Illumination Effect or discernment of surface detail, Figure 7, Silhouette Effect or discernment of outline against a lighter or darker background, Figure 8, Shadow Effect or discernment of an object by its shadow rather than by itself, Figure 9, Glint Effect or discernment of an object by glint from its surface, Figure 10. These methods of discernment require varying intensities of illumination incident on the object, varying angular relationships between eye and object and object and light source, or varying light intensity on backgrounds of the object viewed. An object may be viewed by any one of these methods or may be viewed by a combination of them.

Fig. 9. Illustrating Shadow

Fig. 10. Illustrating Glint

In street lighting practice each of these methods of discernment has its place; in business districts the predominance of pedestrian traffic and the cheerful atmosphere of the area requires illumination intensity and light distribution adequate to provide the discernment of object details. Higher illumination values are necessary for this because light must strike the object and from the object be reflected to the eye in order that detail can be perceived. An object of low light reflecting characteristics, such as a pedestrian in dark clothing, would need to be lighted to a high degree.

On the other hand, thoroughfares carry a predominance of vehicular traffic usually traveling at fairly high speed. Most objects to be viewed are large. It is not essential that these objects be viewed in full detail but only that their presence be detected. Silhouette vision at night permits discernment of such objects as a dark area against a lighter background. The thoroughfare may, therefore, be lighted in such manner as to provide a reasonable degree of surface brightness to the street surface. Objects are viewed in silhouette against this brightness background. When traffic is very heavy a high degree of vertical illumination is desirable also.

In residence streets and outlying areas objects may be viewed by illumination effect, by silhouette or by shadow or glint effects.

ILLUMINATION AND ROADWAY BRIGHTNESS

These two terms have entirely different meanings although there is a definite relationship between the two. They are often confused, with the result that an observer believes illumination to be "spotty" when viewed from a given point because the surface does not appear uniformly bright. This is a common error that should be avoided.

Illumination is the quantitative term applied to the sensation produced when visible light is reflected from an object and impinges on the retina of the eye. Brightness is the product of the illumination in foot-candles by the reflection factor of the surface. Brightness sensation is affected by the angle of incidence of the light on a surface and the angle from which the surface is viewed in any surface which has any degree of specularity.

Most street surfaces are partially specular and from an unfavorable angle of view may not appear bright although the illumination at the point viewed may be high. For this reason a street lighted to provide fully adequate vision by discernment of surface detail may not of necessity appear uniformly bright. Condemning such street lighting should be avoided without due consideration of all the factors involved.

On the other hand, uniformity of surface brightness is desirable in some classes of lighting. In highway lighting, for instance, vision is almost solely by silhouette. Such discernment is obtained when the background is much brighter than the object viewed. To insure silhouette vision over the entire roadway area, and from any normal angle of view, reasonably uniform surface brightness is essential.

MOUNTING HEIGHT AND SPACING

The success of a street lighting system depends to a large extent on the mounting height of the luminaire above the roadway surface. Mounting height controls to a substantial degree the spacing of the luminaires, the size of lamp necessary for the required illumination intensity, and the effectiveness of vision along the street. The most important of these factors affected by mounting height is the efficiency of vision. A light source in the range of vision provides a degree of blinding which reduces the ability of the eye to perform the purpose of seeing. Research has proven that as the angle between the line of vision and a line drawn from eye to light source increases, this blinding effect is decreased. When this angle reaches approximately 25° to 30° the blinding effect is practically eliminated. It is obvious that high mounting heights are necessary in order to provide desirable visual conditions. (For enlarged discussion of this important requirement, please see Page 17, subject "GLARE.")

In addition to this, higher mounting height permits a wider spacing between luminaires with consequent decrease in capital investment necessary to light a given area. See Figure 11.

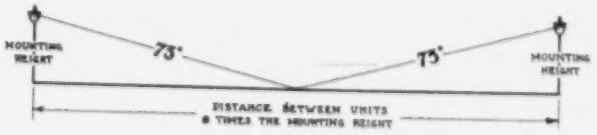


Fig. 11 Spacing Height Ratio Diagram

Vertical light distributions are computed for given ratios between mounting height and spacing, so that at a given ratio the maximum candlepower emitted will strike the street halfway between adjacent luminaires. The spacing, therefore, should be selected in accordance with the mounting height and the type of vertical light distribution delivered by the luminaire.

High mounting height also influences the overall efficiency of the system. With high mounting and wide spacing larger lamps are used. The large size lamps generate light more efficiently than do small size lamps, so that for a given amount of power it is possible to deliver more light to useful areas.

LIGHT DISTRIBUTIONS

The distribution of the light may be represented by photometric curves in two planes, the vertical and the horizontal. The vertical distribution determines the amount of light striking or reaching the area to be lighted and accordingly determines the intensity of illumination provided. The horizontal or lateral distribution shows the effectiveness with which this light is confined to useful areas under varying conditions of width of area, transverse location of luminaire, and mounting height above the area.

Vertical light distributions are computed for a given ratio of spacing to height, not for given heights or given spacing. It is obvious that a change in height accompanied by an exactly proportional change in spacing would make no change in the vertical light distribution required. The angle from the luminaire to the point on the street midway between luminaires would be the same in both cases and other angles would also be the same. For example, for a height of 15′ at a spacing of 120′, the same light distribution would be required as for a height of 20′ at a spacing of 160′.

A study of vertical light distribution curves indicates that at the larger spacing ratios the candlepower values up and down the street become very great and undue blinding may result even at high mounting. On the other hand as the spacing ratio decreases the cost of installation and the cost of maintenance go up because these costs increase with the number of luminaires per mile, even when the wattage per mile remains the same. It has been found that, considering all factors of cost, lighting effectiveness and light distribution, the best results may generally be obtained at a spacing ratio of 8. A curve computed for this ratio which will provide uniform horizontal illumination is shown in Figure 12. For some types of streets, such as thoroughfares, some modification of this curve is desirable. Where the pavement is black bituminous material and uniform surface brightness an important requirement, more flux should be directed at the lower vertical angles.

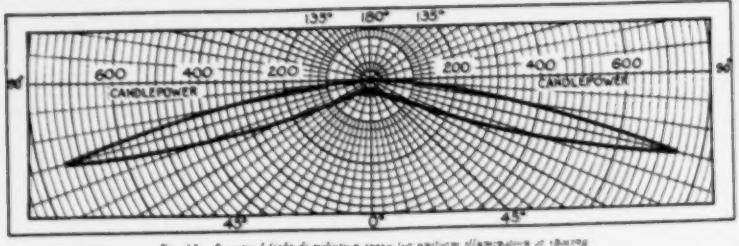


Fig. 12. A vertical light distribution curve for uniform illumination at spacing 8 times the mounting height.

LIGHT DISTRIBUTIONS — Continued

Decreasing the spacing ratio materially below 6 will seriously increase installation and operating costs with only minor compensating advantages. Increasing the ratio to more than 12 requires objectionably high candlepower at high angles and seriously increases glare.

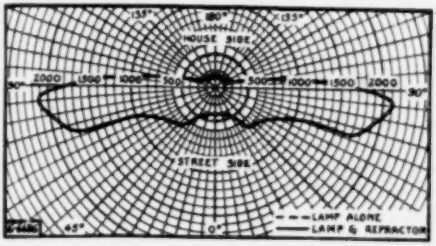


Fig. 13. A typical lateral light distribution curve for side of street location.

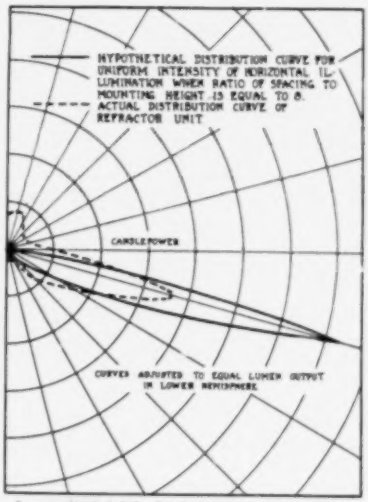


Fig. 14. Vertical light distribution curves. Reprinted from I.E.S. "Code of Street Lighting."

Horizontal or lateral light distributions determine the amount of light which is confined to useful areas. This distribution is called symmetric when the distribution is circular. It is called asymmetric when it is irregular in shape, patterned to fit useful areas in the range of the luminaire. Analysis of the problem based on average street widths and average mounting heights has shown that six different lateral distributions are required; one is symmetric, two are asymmetric for mounting at the side of the street, two are asymmetric for mounting over the center of the street and one is asymmetric for the lighting of highways. A typical asymmetric curve is shown in Figure 13.

In order to obtain approximations of the desirable vertical and lateral light distributions, it is obvious that a high degree of light control is essential in the luminaire. The control may be by either refraction or reflection, but it has been found that it can be obtained more efficiently by refraction. Holophane Refractor distributions, therefore, efficiently approximate both the vertical and lateral distributions required. How well this is accomplished is shown in Figure 14. The Holophane Refractor curve is a close approximation to the computed curve.

GLARE

No factor in street lighting is more generally misunderstood than the factor of glare. Glare, from the standpoint of the illuminating engineer, comprises two distinct effects, as follows:

1—A decrease in the comfort of vision, usually termed "ocular discomfort" or "discomfort glare."

2—A decrease in ability to see, also termed "blinding effect," "decrease in visibility," "depression of visual function."

These two effects are quite different in character and are caused by distinctively different characteristics of the lighting system. They may occur independently of each other.

In street lighting, ocular discomfort is due to the brightness of the luminaire in contrast to the dark background of sky against which it is often viewed. Ocular discomfort is reduced when this brilliancy of light source is reduced and when the contrast between the light source and its background is reduced.

This ocular discomfort may occur in a street lighting system without a serious degree of decrease in ability to see.

The distances to light with a single source are great in street lighting and in the greater number of cases it is impossible to obtain low intrinsic brilliancy from equipment which is effective in delivering light over the wide areas which must be covered. Further, there has been a tendency to consider that if low brightness is obtained, glare has been eliminated. This has caused an unwarranted neglect of the other important manifestation of glare, namely, "decrease in ability to see." Luminaires of high intrinsic brilliancy have been condemned as "glaring" and yet those same luminaires properly installed with respect to mounting height may provide a materially improved seeing condition over luminaires of much lower intrinsic brilliancy.

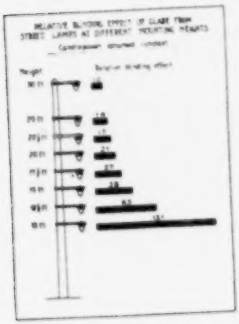


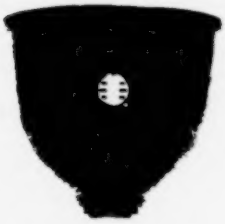
Fig. 15—Relative blinding effect at various mounting heights.

"Decrease in ability to see" or "blinding effect" is caused by light which enters the eye from some light source or light reflecting object. It varies with the amount of light or candlepower from the glare source toward the eye and it varies with the angle which the glare source makes with the line of vision. So far as research has determined, it is absolutely independent of the brightness or intrinsic brilliancy of the light source. If the glare source is moved away from the line of vision, the decrease in ability to see drops off and reaches zero at approximately 30 degrees from the line of vision.

High mounting heights are the most effective way of decreasing the effect of glare. With high mounting the angle between line of vision and light source is substantially increased for nearby sources. The angular change from distant sources is small but the flux of light entering the eye from these distant sources is also small and does not have as great an effect in decreasing ability to see as does the greater amount of flux from nearby sources. Figure 15 shows the relative effect at various heights. Blinding effect is nearly four times as serious at a mounting height of fifteen feet than it is at a mounting height of thirty feet.

HOLOPHANE REFRACTOR CONSTRUCTIONS

Holophane Refractors distribute light efficiently and effectively due to the high degree of light control which is obtained by prismatic action, either refraction or reflection. A Holophane Refractor consists of two* pieces of strong pressed crystal glass nested one within the other and clamped together so as to form a single unit, Figure 16. On the outside surface of the inner piece is formed a series of horizontal prisms which refract and reflect the light downward. On the inside surface of the outer piece is formed a series of vertical prisms which refract the light laterally or diffuse it. The two pieces when nested together house these prisms in a dust-tight chamber. The inner and outer surfaces of the complete refractor are smooth. This construction protects the prisms and at the same time makes cleaning of the exposed surfaces easy and economical. See Figure 16.



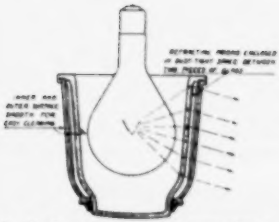


Fig. 16—Construction of dual refractor showing light bending action vertically.

It is the function of the inside piece to conserve the upward-emitted light and direct it downward to produce the ideal vertical distribution required. This increases the amount of light reaching the street surface and adds tremendously to the efficiency of the luminaire in providing illumination.

The outside piece is used to diffuse the light in symmetric distributions, and to refract or bend the light sideways toward the street in asymmetric distributions. This is accomplished without changing the downward direction. The complete refractor therefore saves the upward light normally wasted and saves the downward light that would normally fall outside the street. This results in increased efficiency of utilization, varying from 35% increase upwards. See Figure 17.

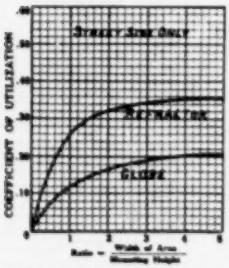


Fig. 17—Typical comparative efficiencies.

Holophane Refractor advantage does not stop at increased light utilization efficiency. The combined actions of the prisms distributes the light along the street in such manner as to improve vision. High candlepower values are directed toward those points that require such values and lower candlepower is directed to other points that need only low values. The street illumination is substantially uniform which is definite aid to better vision.

*Except Lateral Refractors.

HOLOPHANE LATERAL REFRACTOR CONSTRUCTIONS

Early street lighting luminaires used reflectors, either prismatic or of metal, as a means of light control. This early experience proved that with a reflector design it was impossible to obtain vertical light distributions which would permit spacings wide enough to allow economical installation of a system. Reflectors inherently are most efficient when the maximum candlepower is directed downward at low angles, as shown in Figure 18. Economical and efficient street lighting requires maximum candlepower at high angles.

Fig. 18—Diagram showing the change in effective area of a reflector at various angles of maximum candlepower.

Recent trends in street luminaire design have resulted in a form of shielding reflector to direct the light downward, but these forms have been found to have the same limitations as earlier designs.

As Figure 18 shows, it is impossible with a shielding reflector to obtain a large flux of light concentrated in a beam at an angle approaching the horizontal. To concentrate at lower angles requires spacings too close for economical installation costs. Holophane Lateral Refractors were developed to aid the reflector, and establish a reasonable balance between these conflicting requirements.

Fig. 19—Light leading action of lateral refractor.

In these designs the inside surface of the refractor is formed with a series of vertical prisms which bend the light from the reflector outward toward the street and up and down the street, as shown in Figure 19. With the effective control provided by the prismatic construction sufficient candlepower can be built up at 75° to give a good light distribution. These Holophane Refractors, while not permitting as wide a spacing as the standard two-piece type, do very materially add to the efficiency and effectiveness of reflector type luminaires. For example, a Reflector-refractor construction mounted at 20 feet will increase light delivery, above a reflector-globe construction, up to 60% on a 40 foot street, and will permit the widest spacing possible for a given degree of illumination uniformity. Figure 20.

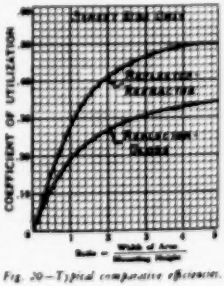


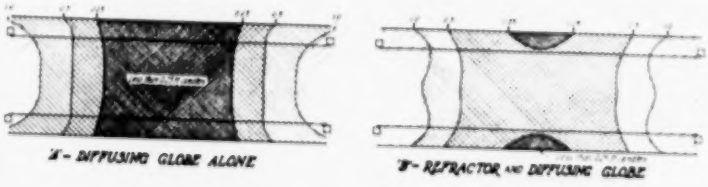
Fig. 20—Typical comparative efficiencies.

HOLOPHANE ILLUMINATION ADVANTAGES

It has been pointed out that the requirements for providing good seeing conditions are rigid and complicated. Research and study have developed light distribution curves which meet these requirements. It becomes a question of equipment which will reproduce these curves most efficiently. Holophane Refractors are the only economical answer to this problem.

Holophane Refractors provide a substantial increase in the amount of light delivered to the useful areas. This increase in illumination varies upward from 35%. Suppose it is averaged at 50%. To increase by 50%, the amount of light delivered using any other method would increase the cost tremendously. For example, if the lamp size were increased 50%, the increased operating cost would principally be in the form of cost of energy. Increasing energy costs in this amount would far exceed the cost of a Holophane Refractor. If the spacing were decreased to obtain more light on the street, the installation costs would be increased, leading to an increase in annual cost greatly in excess of the cost of a Refractor. Holophane Refractors are obviously the most economical method of obtaining increased light delivery.

The advantage does not stop with increased illumination. There is also the advantage of more favorable distribution of this illumination. The extra light is delivered to those areas of the street that need it most. The result is more uniform illumination which contributes to increased ease of visual perception. This is shown graphically in Figure 21. Two systems are shown which are identical except in the respect that one uses a diffusing globe only while the other uses both globe and refractor. Note how the refractor installation increases the illumination midway between luminaires, improving illumination uniformity along the street.



"A" – DIFFUSING GLOBE ALONE

"B" – REFRACTOR AND DIFFUSING GLOBE

In figure A, only diffusing globes are used around the 4 lamps which are located at the edges of the diagram; around each lamp is an area (shaded ▨) where the illumination is one foot-candle or more; then an area (shaded ▨) where the illumination is from 1 to ½ foot-candles; then another area (shaded ▨) where the illumination decreases to ¼ foot-candles; and, finally, there is a very large area (shaded ■ and covering almost half the entire diagram) where the illumination is less than ¼ foot-candles.

Now in figure B, where Holophane Refractors have been placed inside the diffusing globes, the dark area of less than ¼ foot-candles has almost disappeared; and the area of highest illumination has been considerably increased.

Fig. 21

HOLOPHANE OPERATING ADVANTAGES

Modern street lighting technique recommends the installation of pendent luminaires out over the roadway surface. These luminaires may be equipped with Holophane Refractors without the need of any other enclosing glassware.

Refractors are of strong pressed glass which is highly resistant to physical impact and which is not as easily broken as thinner blown glass globes. Impact of a shot from an air gun, even at as close a range as 15 feet, does no serious damage. Repeated hits are necessary from a heavy 12 gauge shot gun. Note Figure 22. Operating experience with the hundreds of thousands of Refractors installed indicates breakage which seldom exceeds 5%, total annually. This contrasted to average of 20%, 30%, for blown glass globes clearly indicates the savings which accrue to the operating departments when Holophane Refractors are used. Even though glass renewal costs may be the same there is a substantial saving in labor charges for replacement, a saving in lamps and the labor to replace them, a saving in warehousing expense, and an improvement in the maintenance of good lighting service.

12 Ga. Shot Gun — No Damage. *12 Ga. Shot Gun — Eight Shots Required to Completely Break.* *Air Gun — No Damage.*

Fig. 22

COST

With the advantages of more illumination and better seeing and with savings in annual operating costs, a Holophane Refractor costs very little more than an enclosing medium that possesses none of these advantages. When this cost is balanced against the total cost of providing lighting service it becomes negligible.

In any street luminaire there must be added to the investment in the luminaire the investment in the supporting pole or bracket, the wire or cable, transformer, lamp and other accessory equipment needed and the labor cost of installation. With even the most inexpensive form of construction this investment is substantial. The cost of a Holophane Refractor, which is the one part which makes the installation most effective, would not increase the investment over 8%, and in many cases not over 5%. Certainly it is worthwhile to increase initial cost by this amount in order to obtain 35%, to 60%, more effectiveness.

MODERNIZING EXISTING SYSTEMS

The advantages of Holophane Refractors are not limited to new luminaires only, nor are the advantages limited to those installations which are installed at spacing-height ratios which are recommended as good practice. Existing systems using old luminaires may be improved and made more effective by the addition to the luminaire of the correct refractor.

Many systems of either upright ornamental luminaires or pendent luminaires were installed many years ago and are not adequate for the service requirements of present traffic conditions. Such systems may be economically revamped and brought up to standards in accordance with present-day recommended practice. Internal refractors may be installed in upright luminaires and without any other changes the present system made much more effective. Bowl refractors may be added at low cost to existing pendent luminaires and the efficiency of these luminaires tremendously increased. Dome Refractors may be added to existing globe installations, either upright or pendent, in order to more effectively utilize the light being at present provided.

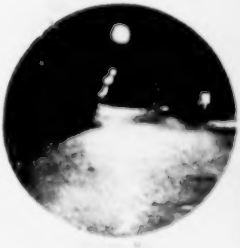
Progressive Municipal Officials and Central Station Operating Engineers should take this means of increasing the efficiency and effectiveness of their street lighting systems. The cost of such modernizing is negligible, and the benefits to be obtained are substantial.

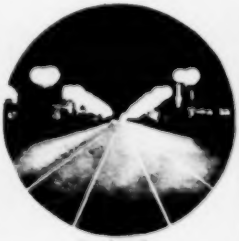
HOLOPHANE

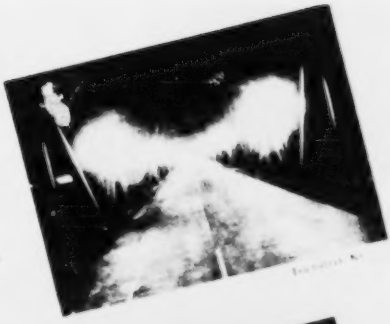
Advanced

LIGHTING for STREETS

From one boundary of the nation to the other, Holophane Refractors provide more efficient and more effective Street Lighting, affording economies in maintenance not obtainable with any other type of system. Streets illuminated by Holophane Refractors are safer, more convenient and representative of progressive communities. These illustrations are but a few of the many Holophane-illuminated thoroughfares.

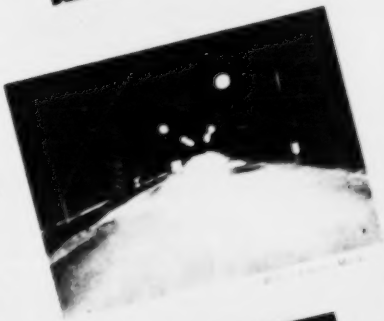


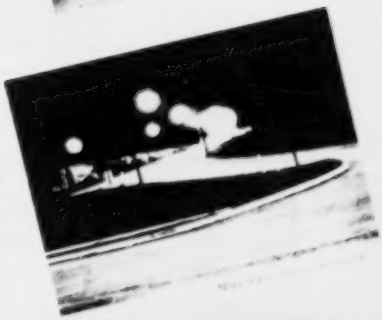


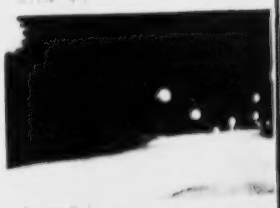


HOLOPHANE Advanced LIGHTING for HIGHWAYS and BRIDGES

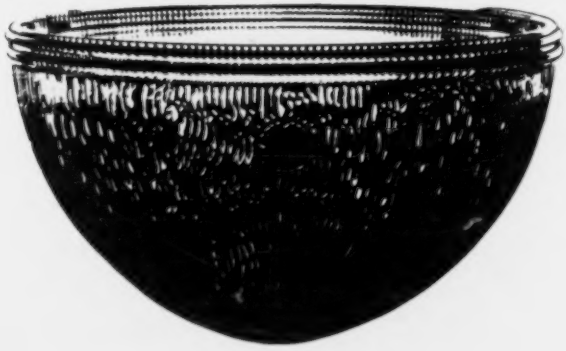
Highways, Bridge Approaches and Bridges that are equipped with Holophane Advanced Lighting are no longer in the "drive with-caution" stage. Holophane Refractors make these once-hazardous sections as safe by night as they are by day. Some typical Holophane installations are shown here. High roadway brightness and reduced glare assure increased safety — with minimal





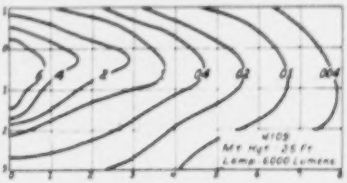


HOLOPHANE-GENERAL ELECTRIC
ASYMMETRIC PENDENT B-WAY LATERAL REFRACTOR



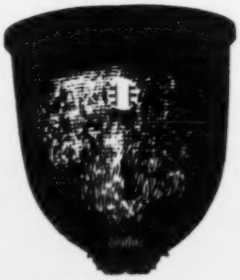
The Holophane-General Electric Lateral B-WAY Refractor is of single piece construction designed for use with deep bowl reflector luminaires. The reflector of the luminaire directs the light downward. The Lateral B-WAY Refractor spreads this downward light up and down the street and outward onto the street to provide approximately uniform illumination over the street and sidewalk. The Lateral B-WAY Refractor permits the widest spacing of the luminaires for a given degree of illumination uniformity. The Lateral B-WAY Refractor No. 4109 is supplied through the General Electric Company for use with General Electric Form 79R pendent luminaires.

The Form 79R Luminaire is used at the side of the street or roadway. The asymmetric design directs the light outward in two beams up and down the street or roadway. The utilization efficiency is very high. The Isolux Chart illustrates the very effective distribution of this refractor when used with the General Electric Form 79 type of reflector.



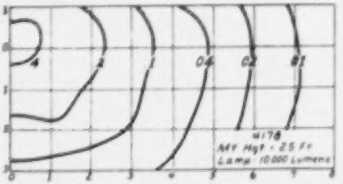
	Holophane Catalogue No.	General Electric Catalogue No.	Lamp Recommendations	Lamp Positions	Dimensions (a)	(b)
	4109	[illegible]	150 – 300 Watt 2,500-10,000 Lumen Lamp	Fixed	[illegible]	[illegible]

HOLOPHANE-GENERAL ELECTRIC
ASYMMETRIC BOWL REFRACTORS
B-SYM-ETRIC TYPES

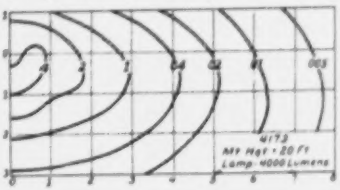


Holophane-General Electric B-SYM-ETRIC type Bowl Refractors are supplied through the General Electric Company and are available in two sizes, 11-inch and 8-inch. The 8-inch is available in two types of distribution, one for city streets and thoroughfares and one for highways. Both the 11-inch and the 8-inch are used on General Electric pendent luminaires without enclosing glassware.

The 11-inch Rippled B-SYM-ETRIC Bowl No. 1178 is used at the side of the street. This Refractor directs the light downward and spreads it outward onto the street. The design characteristics permit wide spacing of the luminaires (8 times mounting height) with fully satisfactory illumination uniformity. The Isolux Chart illustrates this effectiveness.



The 8-inch Rippled B-SYM-ETRIC Bowl No. 1174 is similar to the 11-inch type. The principal difference between the two is size. Used at the side of the street, the 8-inch B-SYM-ETRIC Bowl will provide widespread illumination with fully satisfactory uniformity. The Isolux Chart illustrates these desirable characteristics. HI-WAY Type Refractor No. 1170 is similar to No. 1174 except with a narrower lateral spread. No. 1170 is used for narrow highways.



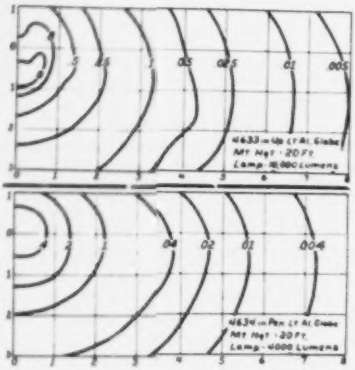
	Holophane Catalogue No.	General Electric Catalogue No.	Lamp Recommendations	Lamp Positions % Max.	% Max.	Dimensions (a)	(b)
	1170		150 watt Multiple 2,500 lumens 10,000 Lumens	d 0"	d 15"	11 5/8"	11"
	1174		150 watt Multiple 2,500 lumens 6,000 Lumens	d 25"	d 0"	8 1/2"	9"
	1170		150 watt Multiple 2,500 lumens 6,000 Lumens	d 25"	d 0"	8 1/2"	9"

HOLOPHANE-GENERAL ELECTRIC DOME REFRACTORS

Holophane-General Electric Dome Refractors are supplied through the General Electric Company and are available in three types, SYM-ETRIC, A-SYM-ETRIC and B-SYM-ETRIC. Similar in size and mechanical design, each provides a light distribution which will increase the effectiveness of any street lighting system. Dome Refractors are always used with an outer enclosing globe of lightly diffusing rippled glass, in either pendent or upright luminaires.

A-SYM-ETRIC Dome Refractor

The A-SYM-ETRIC Dome Refractor No. 4633 directs the light downward and spreads it outward onto the street. The A-SYM-ETRIC Dome should be used at the side of streets where the width is 3 to 5 times the mounting height. The Isolux Chart illustrates the widespread characteristics, and the illuminatuon uniformity provided.



B-SYM-ETRIC Dome Refractor

The B-SYM-ETRIC Dome Refractor No. 4634 directs the light downward and spreads it outward into the street. The B-SYM-ETRIC Dome should be used at the side of streets where the width is less than 3 times the mounting height. The Isolux Chart illustrates the distribution effectiveness of this Refractor.

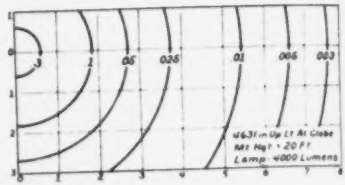
(Continued on Page 27)

Holophane Catalogue No.	General Electric Catalogue No.	Lamp Recommendations	Lamp Positions	Dimensions (a)	Dimensions (b)
4633	5779686	150- 400 Watt	For 50 Max., d 17"	8½"	4⅞"
4633	2346031	2,500-15,000 Lumen	For 75 Max., d 9½"		
4634	2346129				

DOME REFRACTORS—Continued

SYM-ETRIC Dome Refractor

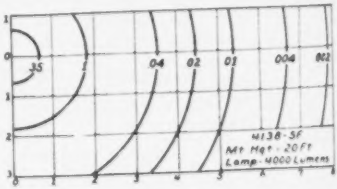
The SYM-ETRIC Dome Refractor No. 4631 directs the light downward and spreads it evenly around the luminaire. The SYM-ETRIC Dome may be used at the side or over the center of the street, or in parkway areas. The Isolux Chart indicates the wide spreading characteristics of this refractor.



HOLOPHANE-GENERAL ELECTRIC SYM-ETRIC BOWL REFRACTOR

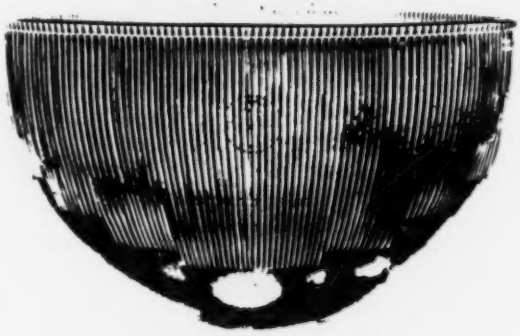
The Holophane-General Electric SYM-ETRIC Bowl Refractor is supplied through the General Electric Company for use with pendent type luminaires without enclosing glassware. Of regular two-piece construction, this refractor is very effective for use in residential and outlying areas where wide spread symmetric light distribution is desired.

Holophane-General Electric SYM-ETRIC Bowl Refractor No. 4138-SF directs the light downward and spreads it evenly around the luminaire. This refractor generally is used over the center of the street, but may be used at the side of the street. The Isolux Chart shows the widespread characteristics.



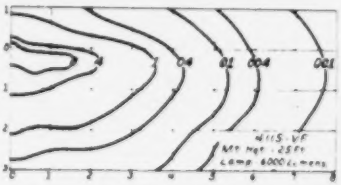
	Holophane Catalogue No.	General Electric Catalogue No.	Lamp Recommendations	Lamp Positions 70° Max.	75° Max.	Dimensions (a)	(b)
	4138-SF	1340382	150- 400 Watt 2,500-6,000 Lumen	d 2¾"	d 5"	8½"	7⅞"

HOLOPHANE-WESTINGHOUSE
ASYMMETRIC PENDENT B-WAY LATERAL REFRACTOR



The Holophane Westinghouse Lateral B-WAY Refractor is of single piece construction designed for use with deep bowl reflector luminaires. The reflector of the luminaire directs the light downward. The Lateral B-WAY Refractor spreads this downward light up and down the street and outward onto the street to provide approximately uniform illumination over the street and sidewalk. The Lateral B-WAY Refractor permits the widest spacing of the luminaires for a given degree of illumination uniformity. The Lateral B-WAY Refractor No. 4115 VF is supplied through the Westinghouse Electric and Manufacturing Company for use with Westinghouse Retractolux luminaires.

The Retractolux luminaire is used at the side of the street or roadway. The asymmetric design directs the light outward in two beams up and down the street or roadway. The utilization efficiency is very high. The Isolux Chart illustrates the very effective distribution of this refractor when used with the Westinghouse Retractolux luminaire.

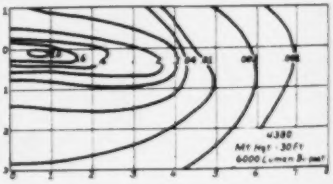


	Holophane Catalogue No.	Westinghouse Catalogue No.	Lamp Recommendations	Lamp Positions	Dimensions (a)	(b)
	4115 VF	#01021	150 - 500 Watt 2,500 to 9,000 Lumen	Fixed	15	8

HOLOPHANE-WESTINGHOUSE
ASYMMETRIC PENDENT HILUX HIGHWAY REFRACTOR

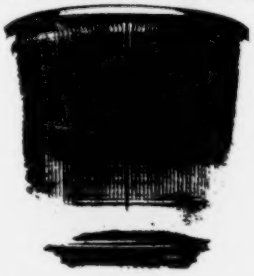
The Holophane-Westinghouse HILUX Refractor is a two-piece hemispherical refractor designed for the lighting of highways and arterial thoroughfares. The HILUX Refractor is used with an upper spherical reflector and the two in combination direct the light downward and up and down the roadway in two powerful beams. Excellent shielding from glare is obtained, particularly when the bi-post lamp with horizontal filament is used. By offsetting the light center position horizontally in the refractor varying degrees of lateral asymmetry may be obtained. The HILUX Refractor No. 4380 is supplied through the Westinghouse Electric and Manufacturing Company for use with the Westinghouse HILUX luminaire.

The HILUX LUMINAIRE is used at the side of the roadway. The asymmetric construction is designed to confine the light to comparatively narrow roadways. The spacing may be wide (8 times mounting height) with very effective results. The Isolux Chart illustrates the effectiveness of this refractor when used with the HILUX luminaire.



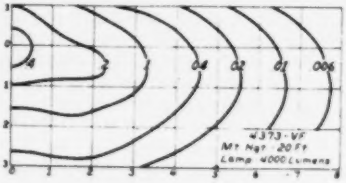
Holophane Catalogue No.	Westinghouse Catalogue No.	Lamp Recommendations	Lamp Positions 70° Max.	75° Max.	Dimensions (a)	(b)
4380	4A5228	150- 500 Watt 2,500-10,000 Lumen	d 1/2	d 1/2	13 1/2"	6 5/8"

HOLOPHANE-WESTINGHOUSE
ASYMMETRIC BI-LUX BOWL REFRACTORS

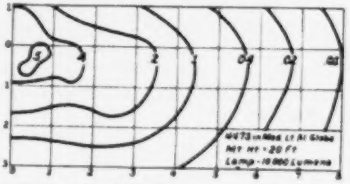


The Holophane-Westinghouse BI-LUX Bowl Refractors are of two types. The closed bottom construction is used on pendent luminaires, generally without enclosing glassware. The open bottom construction is used inside lightly diffusing upright ornamental luminaires. These refractors direct the light downward and outward onto the street in two fan-like beams. Both types are supplied through Westinghouse Electric and Manufacturing Company for use with Westinghouse pendent and upright luminaires.

The pendent BI-LUX Bowl Refractor No. 4373-VF is used at the side of the street. The design permits wide spacing of the luminaires (8 times mounting height) with excellent illumination uniformity. The velvet finish applied gives a pleasing degree of diffusion. The Isolux Chart indicates the effectiveness of this refractor.



The upright BI-LUX Refractor No. 4373 is used at the side of the street inside lightly diffusing ornamental upright luminaires. Sufficient light is directed away from the street properly to illuminate building fronts in business district areas. The Isolux Chart shows the desirable light distribution of this refractor.

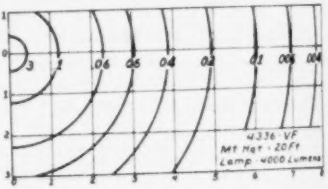


	Holophane Catalogue No.	Westinghouse Catalogue No.	Lamp Recommendations	Lamp Positions 70° Max.	Lamp Positions 75° Max.	Dimensions (a)	Dimensions (b)
	4373-VF	344199	150- 300 Watt 2,500- 6,000 Lumen	d 2¾"	d 4"	8½"	8"
	4373	344666	150- 500 Watt 2,500-10,000 Lumen	d 2⅞"	d 33/8"	8½"	8"

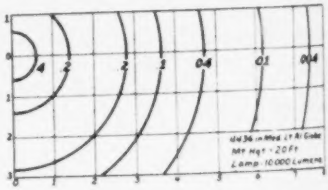
HOLOPHANE-WESTINGHOUSE
SYMMETRIC SUPERLUX BOWL REFRACTORS

The Holophane Westinghouse symmetric SUPERLUX Refractors are available in two types. The closed bottom bowl type is used on pendent luminaires, generally without enclosing glassware. The open bottom type is used in lightly diffusing upright ornamental luminaires. These refractors direct the light downward and spread it evenly around the luminaire. Both types are supplied through Westinghouse Electric and Manufacturing Company for use with Westinghouse pendent and upright luminaires.

The pendent SUPERLUX Bowl Refractor No. 4436-VF is used over the center of the street or at the side of the street. Wide spacing (8 times mounting height) may be used. The velvet finish adds a desirable degree of diffusion. The Isolux Chart illustrates the effectiveness of this refractor.



The upright SUPERLUX Refractor No. 4436 is designed for use inside lightly diffusing ornamental upright luminaires. The spacing may be wide (8 times mounting height). The luminaires may be at the side of the street, or along a center parkway. The Isolux Chart illustrates the effectiveness of this refractor when used with a Westinghouse enclosing globe.

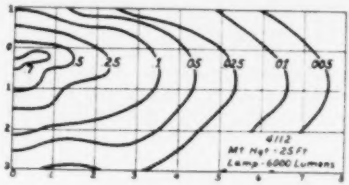


Holophane Catalogue No.	Westinghouse Catalogue No.	Lamp Recommendations	Lamp Positions "a" Max.	"d" Max.	Dimensions (a)	(b)
4436-VF	4446-40	150- 400 Watt 2500-6000 Lumen	d 2⅝"	d 4"	8½"	8"
4436	4446-58	150- 500 Watt 2500-10,000 Lumen	d 2⅞"	d 4⅛"		

HOLOPHANE-LINE MATERIAL
ASYMMETRIC PENDENT B-WAY LATERAL REFRACTOR

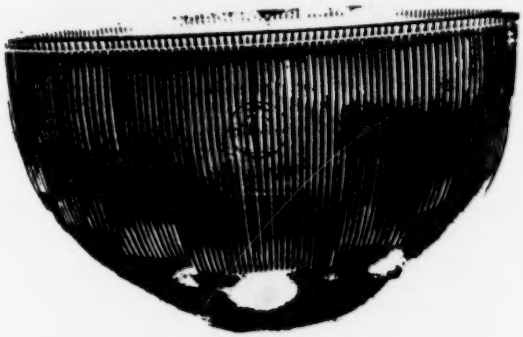
The Holophane-Line Material Lateral B-WAY Refractor is of single piece construction designed for use with deep bowl reflector luminaires. The reflector of the luminaire directs the light downward. The Lateral B-WAY Refractor spreads this downward light up and down the street and outward onto the street to provide approximately uniform illumination over the street and sidewalk. The Lateral B-WAY Refractor permits the widest spacing of the luminaires for a given degree of illumination uniformity. The Lateral B-WAY Refractor No. 4112 is supplied through the Line Material Company for use with Line Material Spherolite luminaires.

The SPHEROLITE LUMINAIRE is used at the side of the street or roadway. The asymmetric design directs the light outward in two beams up and down the street or roadway. The utilization efficiency is very high. The Isolux Chart illustrates the very effective distribution of this refractor when used with the Line Material Spherolite Luminaire.



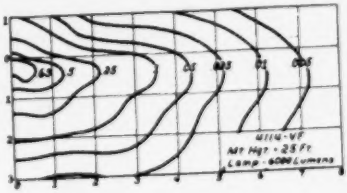
	Holophane Catalogue No.	Line Material Catalogue No.	Lamp Recommendations	Lamp Positions	Dimensions (a)	Dimensions (b)
	4112	H-14	150- 500 Watt 2,500-10,000 Lumen	Fixed	12(1)"	8"

HOLOPHANE STANDARD LINE
ASYMMETRIC PENDENT B-WAY LATERAL REFRACTOR



The Holophane-Standard Line Lateral B-WAY Refractor is of single piece construction designed for use with deep bowl reflector luminaires. The reflector of the luminaire directs the light downward. The Lateral B-WAY Refractor spreads this downward light up and down the street and outward onto the street to provide approximately uniform illumination over the street and sidewalk. The Lateral B-WAY Refractor permits the widest spacing of the luminaires for a given degree of illumination uniformity. The Lateral B-WAY Refractor No. 4114-VF is supplied through the Philadelphia Electrical and Manufacturing Company and other manufacturers for use with pendent reflector-refractor luminaires.

The Lateral B-WAY Refractor No. 4114-VF is used at the side of the street or roadway. The asymmetric design directs the light outward in two beams up and down the street or roadway. The utilization efficiency is very high. The Isolux Chart illustrates the very effective distribution of this refractor when used with the proper design of upper reflector.

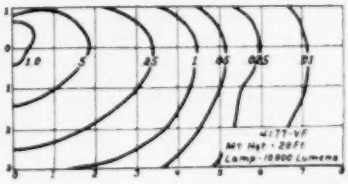


Holophane Catalogue No.	Philadelphia Elec. & Mfg. Co. Catalogue No.	Lamp Recommendations	Lamp Position	Dimensions (a)	(b)
4114-VF	4114-VF	150- 300 Watt 2,500-10,000 Lumen	Fixed	12	8"

HOLOPHANE STANDARD LINE
ASYMMETRIC PENDENT B-WAY BOWL REFRACTORS

Holophane-Standard Line B-WAY type Bowl Refractors are supplied through the Line Material Company and other manufacturers of complete street lighting equipment. These refractors are available in two sizes, 11-inch and 8-inch. The 11-inch refractor is supplied in either velvet finish or satin finish, depending on the character of pavement of the street on which the refractor is to be used. These refractors are used without enclosing glassware on pendent luminaires of the Line Material Company and other manufacturers.

Holophane-Standard Line B-WAY Bowl Refractor No. 4177-VF is used at the side of the street. The refractor directs the light downward and outward onto the street. With this refractor the spacing may be wide (8 times mounting height). This design is used generally on streets predominantly light in color, such as concrete. The Isolux Chart shows the very effective distribution of this refractor.



(Continued on Page 35)

	Holophane Catalogue No.	Line Material Catalogue No.	Lamp Recommendations	Lamp Positions °D Max.	Lamp Positions °S Max.	Dimensions (a)	Dimensions (b)
	4177-VF	HH32VF	150- 500 Watt 2,500-10,000 Lumen	d 6"	d 4⅝"	11½"	11"
	4177-SF	HH32SF	150- 500 Watt 2,500-10,000 Lumen	d 4⅝"	d 4½"	11½"	11"

NEW

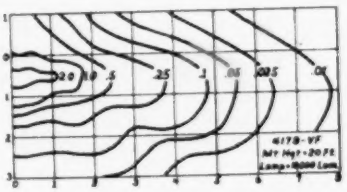
HOLOPHANE STANDARD LINE
ASYMMETRIC PENDENT C-WAY BOWL REFRACTOR

A new 11-inch C-WAY Bowl Refractor is available which is similar in physical design and appearance to Refractor No. 4177-VF shown on the opposite page. The light distribution pattern is quite different.

The utilization efficiency of this new Refractor has been increased substantially above that of Refractor No. 4177. This increase is made possible by several changes in design including increased lateral concentration of the light. With present lamp sizes it is no longer necessary to include in the lateral width of beam the area between curb line and property. This new Refractor confines its beam to the area from curb to curb.

No other enclosing glassware is needed.

Holophane Standard Line C-WAY Bowl Refractor No. 4179-VF is used at the side of the street on pendent luminaires. The refractor directs the light downward and outward onto the street. The spacing may be wide (8 times mounting height). This Refractor should be used generally for all classes of streets and particularly streets 50 feet wide or narrower. The Isolux Chart shows the excellent effectiveness of this refractor.



	Holophane Catalogue No.	Line Material Catalogue No.	Lamp Recommendations	Lamp Positions 70° Max.	Lamp Positions 75° Max.	Dimensions (a)	Dimensions (b)
	4179-VF	H-52	150 - 500 Watt 2,500-10,000 Lumen	5"	3⅝"	11⅜"	11"

Please insert on Page 35 of Booklet No. 1150
"Advanced Street Lighting Practice"
HOLOPHANE CO., INC.
Street Lighting Dept.
NEWARK, OHIO

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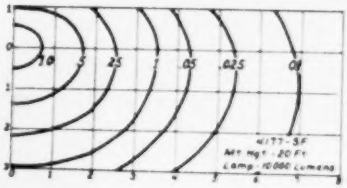
3M-11-39-Printed in U.S.A.

HOLOPHANE STANDARD LINE

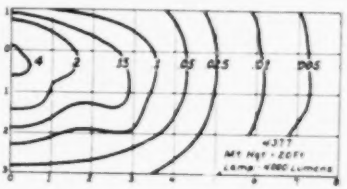
ASYMMETRIC PENDENT B-WAY BOWL REFRACTORS—Continued

Holophane Standard Line B-WAY Bowl Refractor No. 4177-SF is similar in design and construction to No. 4177-VF. The satin finish adds a desirable degree of diffusion for use on streets predominately dark in color, such as asphalt, and this refractor is used generally for such streets. The Isolux Chart illustrates the distribution characteristics of this refractor.



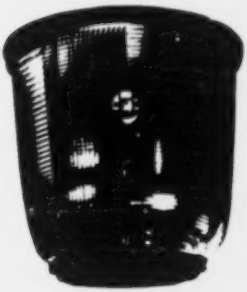
The Holophane-Standard Line B-WAY type Bowl Refractor in the 8-inch size is supplied through the Line Material Company and other manufacturers of compete street lighting equipment. This refractor is similar in design and construction to the 11-inch, the principal difference being size. The B-WAY Bowl may be used at wide spacing (8 times mounting height) on pendent type luminaires.

The Holophane-Standard Line B-WAY Bowl Refractor No. 4377 is used at the side of the street. The refractor directs the light downward and outward onto the street. Although generally used without enclosing glassware, the B-WAY Bowl may be used with an outer globe if desired. The Isolux Chart shows the effectiveness of this refractor.



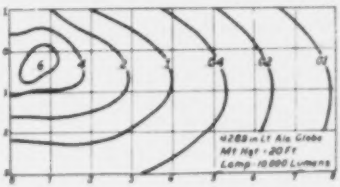
	Holophane Catalogue No.	Line Material Catalogue No.	Lamp Recommendations	Lamp Positions "d" Max.	"h" Max.	Dimensions (a)	(b)
	4377	H-40	150- 400 Watt 2,500-6,000 Lumen	d - 2⅜"	d - 0"	8½"	7⅛"

HOLOPHANE STANDARD LINE
ASYMMETRIC UPRIGHT B-WAY REFRACTOR



The Holophane Standard Line upright B-WAY Refractor is supplied through the Line Material Company and other manufacturers for use with lightly diffusing upright ornamental luminaires. The upright B-WAY refractor directs the light downward and outward onto the street in two fan-like beams. Support in the luminaire may be either from the bottom or the top of the refractor.

The Holophane Standard Line upright B-WAY Refractor No. 1289 is used at the side of the street inside lightly diffusing ornamental upright luminaires. The upright B-WAY may be used at wide spacing (8 times mounting height) with fully satisfactory results. Sufficient light is directed away from the street properly to illuminate building fronts in business district areas. The Isolux Chart shows the desirable light distribution of this refractor.

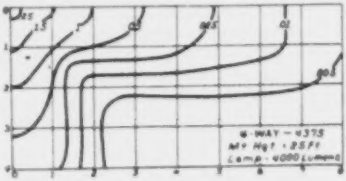


	Holophane Catalogue No.	Line Material Catalogue No.	Lamp Recommendations	Lamp Positions 70° Max.	Lamp Positions 75° Max.	Dimensions (a)	Dimensions (b)
	1289	H-89	150- 500 Watt 2,500-10,000 Lumen	d 2¼"	d 1"	8½"	8⅝"

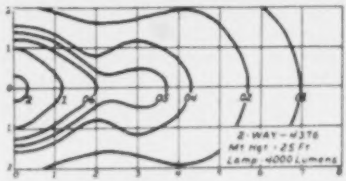
HOLOPHANE STANDARD LINE
ASYMMETRIC 2-WAY AND 4-WAY BOWL REFRACTORS

Holophane Standard Line 2-WAY and 4-WAY Bowl Refractors are available in 8-inch size for use pendent in residence districts, warehouse areas, etc. The 4-WAY directs the light downward and spreads it outward in four beams 90° apart. The 2-WAY directs the light downward and spreads it up and down the street in two beams 180° apart. These refractors are supplied through all recognized manufacturers.

Holophane Standard Line 4-WAY Refractor No. 4475 is used over the center of street intersections at mounting heights of 25 feet or more. A powerful beam is directed up each intersecting street. No outer enclosing globe is used. The spacing may be wide (8 times mounting height). The Isolux Chart shows the effective four way distribution.



Holophane Standard Line 2-WAY Refractor No. 4476 is used over the center of the street between intersections at mounting heights of 25 feet or more. Powerful beams are directed along the street in opposite directions. No outer enclosing globe is used. The spacing may be wide (8 times mounting height). The Isolux Chart shows the effective two way distribution.

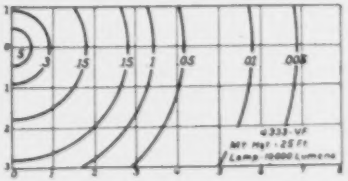


	Holophane Catalogue No.	Catalogue No. (a)	Catalogue No. Wire	Lens Mat.	Lamp Recommendations	Lamp Positions % Max.	Lamp Positions % Max.	Dimensions (a)	Dimensions (b)
	4475	2422502	4500758	H-24	250-300 Watt 2,500-6,000 Lumen	d 25%	d 4"	10½"	15⅜"
	4476	2422503	4500758	H-24	250-300 Watt 2,500-6,000 Lumen	d 25%	d 4"	10½"	15⅜"

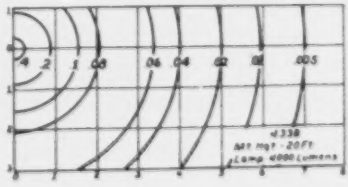
HOLOPHANE STANDARD LINE SYMMETRIC BOWL REFRACTORS

Holophane-Standard Line SYMMETRIC Bowl Refractors are available in two sizes, 11-inch and 8-inch. These refractors direct the light downward and spread it evenly around the luminaire. Both sizes are supplied through Line Material Company and other manufacturers for use on pendent luminaires without enclosing glassware.

The Holophane-Standard Line 11-inch SYMMETRIC Bowl Refractor No. 4333-VF is used pendent over the center of the street, along center parkways or at the side of the street. With this refractor the spacing may be wide (8 times mounting height) with fully satisfactory results. The Isolux Chart shows the wide spread effectiveness of this refractor.



The Holophane-Standard Line 8-inch SYMMETRIC Bowl Refractor No. 4338 is similar in design and construction to the 11-inch, the principal difference being size. Used over the center of the street, or at the side, this refractor may be used at wide spacing. The Isolux Chart shows the wide spread characteristics of this refractor.

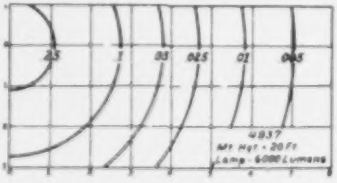


	Holophane Catalogue No.	Line Material Catalogue No.	Lamp Recommendations	Lamp Positions % Max.	% Max.	Dimensions (a)	(b)
	4333-VF	H-11-VF	1500 Watt 2,500-10,000 Lumens	d 0°	d 5⅝°	11⅝"	9⅝"
	4338	H-8	1500 Watt 2,500-6,000 Lumens	d 2½°	d 0°	8½"	7⅝"

HOLOPHANE STANDARD LINE
UPRIGHT ORNAMENTAL SYMMETRIC REFRACTOR

The Holophane Standard Line Upright Ornamental SYMMETRIC Refractor is a complete luminaire designed for use along center parkways, in parks, residence areas, etc., where wide spread distribution is desired. The refractor directs the light downward and spreads it evenly in all directions around the unit. The upright SYMMETRIC refractor is supplied complete by Line Material Company and other manufacturers. The ornamental band and finial and the lamp socket are not supplied by Holophane.

The Holophane Standard Line Upright Ornamental Refractor No. 1937 is a very effective luminaire of pleasing appearance. The spacing may be wide with this luminaire (8 times mounting height) with approximately uniform illumination over the street and sidewalks. The Isolux Chart shows this effective distribution.



Holophane Catalogue No.	Line Material Catalogue No.	Lamp Recommendations	Lamp Positions "a" Max.	"b" Max.	Dimensions (a)	(b)
1937 Refractor 1937-SF Canopy	160911	150 Watt 2,500-6,000 Lumen	6"	6½"	16½"	19½"

SUMMARY

Catalog No.	Page	DESCRIPTION	Available Through	APPLICATION
4109	24	Lateral B-WAY	General Electric	Side of Street or Highway
4112	32	Lateral B-WAY	Line Material	Side of Street or Highway
4114VF	33	Lateral B-WAY	Standard Line	Side of Street or Highway
4115VF	28	Lateral B-WAY	Westinghouse	Side of Street or Highway
4138SF	27	8" SYM-ETRIC Bowl	General Electric	Side or Center of Street
4170	25	8" HI-WAY Bowl	General Electric	Side of Highway
4173	25	8" B-SYM-ETRIC Bowl	General Electric	Side of Street
4177VF	34	11" B-WAY Bowl	Standard Line	Side of Street
4177SF	34	11" B-WAY Bowl	Standard Line	Side of Street
4178	25	11" B-SYM-ETRIC Bowl	General Electric	Side of Street
4289	36	Upright B-WAY	Standard Line	Side of Street
4333VF	38	11" SYMMETRIC Bowl	Standard Line	Side or Center of Street
4336VF	31	8" SUPERLUX Bowl	Westinghouse	Side or Center of Street
4338	38	8" SYMMETRIC Bowl	Standard Line	Side or Center of Street
4373VF	30	8" BILUX Bowl	Westinghouse	Side of Street
4375	37	8" 4-WAY Bowl	Standard Line	Center of Intersection
4376	37	8" 2-WAY Bowl	Standard Line	Center of Street
4377	35	8" B-WAY Bowl	Standard Line	Side of Street
4380	29	HILUX Bowl	Westinghouse	Side of Highway
4436	31	Upright SUPERLUX	Westinghouse	Side or Center of Street
4473	30	Upright BILUX	Westinghouse	Side of Street
4631	27	SYM-ETRIC Dome	General Electric	Side or Center of Street
4633	26	A-SYM-ETRIC Dome	General Electric	Side of Street
4634	26	B-SYM-ETRIC Dome	General Electric	Side of Street
4937	39	SYMMETRIC Ornamental	Standard Line	Side or Center of Street

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[fol. 391] GOVERNMENT'S EXHIBIT 32

HOLOPHANE COMPANY, INC.
For Department Use Only

To Office or Dept. ——

Attention: Mr. Charles Franck.

New York 17, N. Y., Date: 2/24/19 (Dic. 2/23)

Subject: Foreign Inquiries.

Dear Mr. Franck:

I am not sure that we are dealing with foreign inquiries and orders correctly. I am speaking of business in those countries in which, theoretically, sales are allotted to other Holophane Companies—I am excluding America and the possessions of the United States (Japan too, I believe).

Would you please, at your convenience, give me instructions on the following situation:

1. An inquiry received from a concern in the United States calling for Holophane U. S. A. products to be shipped to them in a country serviced by a foreign Holophane Company:

A. Do we refer the inquirer to the appropriate Holophane Company; or

B. Do we ask the appropriate Holophane Company for instructions in handling; or

C. Do we quote and inform the appropriate Holophane Company that we have done so?

2. An inquiry received from a concern located in a foreign country serviced by a foreign Holophane Company:

A. Do we refer the inquirer to the appropriate Holophane Company; or

B. Do we ask the appropriate Holophane Company for instructions in handling; or

C. Do we quote and inform the appropriate Holophane Company that we have done so?

3. An order from a concern in the U. S. for material not manufactured by the appropriate foreign Holophane Company and to be shipped into the territory regularly serviced by the foreign Holophane Company:

A. Do we accept the order and fill it and inform the appropriate Holophane Company; or

B. Do we inform the appropriate Holophane Comphane Company that we have the order and ask for their directions?

4. An order from a concern in the U. S. for material regularly manufactured or practically duplicated by the the appropriate foreign Holophane Company and to be shipped into the territory regularly serviced by the foreign Holophane Co.:

A. Do we accept the order and fill it and inform the appropriate Holophane Company; or

B. Do we inform the appropriate Holophane Company that we have the order and ask for their directions?

[fol. 392] (We would consider export companies, such as I.G.E., as acting in behalf of the concern located in a foreign country rather than as a concern located in the U. S. A.)

5. Inquiries for our literature from:

A. Concerns in the U. S. requesting literature to be sent to a foreign country serviced by a foreign Holophane Company;

B. From concerns in a foreign country serviced by a foreign Holophane Company.

You, of course, know how I feel about number one but I would appreciate your answers to these questions because they cover all the situations I can think of and a clear-cut statement will be of immeasurable help in the handling of this kind of business. I think that in view of the present government program, Marshall Plan, etc., that we can expect that there will be even more of this in the future and that's why it seems to me to be desirable to have a clear-cut statement that I can use as a guide.

Very truly yours, Clarence.

C. C. Keller: MN.

[fol. 393] GOVERNMENT'S EXHIBIT 33

Mr. Keller

March 1, 1949.

Foreign Inquiries

Yours of the 24th we dealt with this matter over the telephone and I gave you answer point by point, also reminding you of the last paragraph of Page 1 of my letter of June 11, 1945 to Holophane Ltd., attention Guy Campbell, under heading "Inter-Company Buying" which is in the safe. I have had just recently very aggravating correspondence with Paris but delay dealing with the matter until I know definitely if I will go to London and Paris to thrash this matter out once and for all.

If anything is not clear as an outcome of our phone conversation of today, let me know.

CF:V.

[fol. 394] GOVERNMENT'S EXHIBIT 34

Mr. Charles Franck. 3/3/49 (Dic. 3/2).

Foreign Inquiries

Dear Mr. Franck:

With further reference to my letter of the 24th and our subsequent conversation, I must confess that I have never been able to understand the June 11th letter and that is why I tried to set this thing down in more or less simple and straight-forward language.

As I understand it though, under number one, where we do the specification work, we are to follow "B" and not "A" or "C".

Incidentally, wouldn't it make a difference where the problem came up with respect to say England as against Africa?

Very truly yours, —— ——.

C. C. Keller: MN.

[fol. 395] GOVERNMENT'S EXHIBIT 35

September 14th, 1948 (Dic. 9/13).

Holophane Ltd.,
Elverton Street, Vincent Square,
London, S. W. 1, England.

Gentlemen:

We have an inquiry from R. B. Sheffer, Apparatus Division, International General Electric Company, Schenectady, New York, their reference RBS-25097, for permission to supply a quantity of No. 4110 refractors to them for sale in fixtures that they will ship to Lebanon.

We have informed them that we cannot sell them these refractors but suggested that they obtain quotations from you. Accordingly, Mr. Sheffer would appreciate if you would quote him on these refractors which they use in their form 79-R and 101-R Luminaires.

If you elect to purchase these refractors from us your cost will be $1.38 net each f.o.b. factory, shipping and packing charges extra.

Very truly yours, Holophane Company, Inc., Vice-President, In Charge of Sales.

C. C. Keller: MN; cc CF, Q, BD.

[fol. 396] GOVERNMENT'S EXHIBIT 36

September 17th, 1948.

Air Mail.
Holophane Limited,
Elverton Street, Vincent Square,
London, S. W. 1, England.

Gentlemen:

Supplementing our letter of September 14th, you will understand, of course, that the prices given in the last paragraph are approximate because they will be determined exactly according to the formula.

In addition, you may be interested to know what our

selling price to the General Electric Company here in this country is and at present it is $3.47 net each, f.o.b. our factory, with export packing extra.

Very truly yours, Holophane Company, Inc., Vice-President, In Charge of Sales.

C.C.Keller:MN.

[fol. 397] GOVERNMENT'S EXHIBIT 37

Holophane lens lighting distributors agreement between HOLOPHANE Company, Inc., of 342 Madison Avenue, New York, N. Y., hereinafter called the Manufacturer, and The Art Metal Company, of 1814 East 40th Street, Cleveland 3, Ohio, hereinafter called the Distributor.

Whereas the Distributor desires to become one of the Distributing Outlets for Holophane Lenses, principally prismatic plates, and,

Whereas it is the desire of both parties to make the marketing of the Manufacturer's lens products more effective,

Now therefore, in consideration of the covenants herein contained and the sum of One Dollar ($1.00) by each party to the other paid, the receipt of which is hereby acknowledged, the parties to this contract agree:

Territory

The Distributor will represent the Manufacturer as lens distributor in the United States of North America but in no other territory. The export of Holophane lenses to Canada, Central or South America, or other export countries is not permitted without prior approval obtained by the Distributor from the Manufacturer.

Price and Terms

The Manufacturer agrees to sell and the Distributor agrees to purchase from the Manufacturer such lenses as the Distributor may from time to time order from the Manufacturer for the period under which the agreement continues, at prices and terms in effect at the date hereof.

The Manufacturer reserves the right on thirty (30) days' notice in writing to the Distributor to change the above terms in accordance with any general price and terms alteration which it may establish generally or nationally in relation to its sale of lenses.

It is understood and agreed, however, that this agreement shall only continue provided that Distributor's purchases from the Manufacturer of the articles covered by [fol. 398] this agreement shall reach Two Thousand Dollars ($2,000.00) net for the year 1945 and Three Thousand Dollars ($3,000.00) net annually thereafter. If this minimum is not reached, the Manufacturer, at its option, may terminate the agreement at the end of any year.

This distributorship is granted solely for the sale of lenses as part of an equipment manufactured or sold by the Distributor and such lenses shall only be bought in connection with such equipment or as replacements and shall not be bought and resold alone as merchandise by the Distributor.

It is understood and agreed that the Manufacturer from time to time manufactures and sells certain of its own special units and such units are not included in the products to be marketed and sold by the Distributor.

If the Manufacturer at any time shall have any doubt about the Distributor's financial responsibility, the Manufacturer may decline to make further deliveries hereunder until the Distributor shall have satisfied the Manufacturer of the Distributor's financial responsibility (which satisfaction is not to be unreasonably withheld), or shall have paid in advance for such further deliveries.

Other Distributors

This is not an exclusive agreement and the Manufacturer reserves the right to appoint other distributors. In creating such distributorships, the Manufacturer will not grant the same except to concerns which have recognized illuminating engineering facilities and personnel at headquarters and at as many points as possible in the field.

Trade Endeavor

The Distributor will use reasonable endeavors to employ Holophane lenses coming under this agreement with its

own product wherever possible. The Distributor also agrees to catalogue and sell such Holophane lenses in connection with the Distributor's product and will promote the sale of such units using Holophane lenses by all reasonable commercial means.

[fol. 399] The Distributor further agrees that it will be part of its policy in lens lighting generally and comprehensively to use reasonable endeavors to recommend, publicize, promote and sell Holophane lenses whether made of glass or other material and to provide sincere and comprehensive field support for the proper application of Holophane lenses through the efforts of trained engineering representatives.

For the purpose of carrying out the above provision the Distributor agrees that he will furnish Holophane lenses only in units which have been approved by the Manufacturer, and for the purpose of obtaining such approval the Manufacturer will extend to the Distributor the engineering experience of the Holophane Company, Inc., in the optical design of its equipment. The Distributor will, therefore, submit to the Manufacturer sketches showing the proposed relation of the elements making up the optical train of the desired unit.

Trade-Mark

The Manufacturer markets its products under the trademark HOLOPHANE and other special trade marks (including the trade-mark CONTROLENS) including its manufacture, which are acknowledged by the Distributor to be valid trade-marks and the exclusive property of the Manufacturer.

It is anticipated that the special trade-marks which have been chosen by the Manufacturer for certain of its lenses shall be made known to the Distributor and shall be used by the Distributor in marketing the units and wherever such other names are used they shall be designated as a Holophane product or such product manufactured for the Distributor. For instance, the Distributor shall always refer to the lens as a Holophane CONTROLENS.

If any trade name is applied by the Distributor to the products of the Manufacturer during the period of this

contract, the Distributor shall not have the right thereafter to apply such trade name to the product of any other Manufacturer.

[fol. 400]

Stock

The Distributor agrees to use reasonable efforts to maintain in his warehouse at all times a minimum stock of Holophane lenses consistent with the ability to serve his normal business from his own warehouse rather than by direct shipment from the Manufacturer's factory, to renew this stock whenever it falls below the minimum amount.

Manufacturer's Engineering Services

The Manufacturer undertakes:

(a) to maintain a competent engineering staff and to provide highly specialized engineering services in the design of Holophane lenses and equipment to the end that the technical lighting requirements of the field application for which the complete equipment is intended will best be served.

(b) to aid in the public education of the right use of Holophane lenses through the medium of advertising, technical publicity and talks to selected groups, and in general to assist in the overall promotion and public acceptance for its lenses; to maintain this service to the Distributor's headquarters.

Warranty

The Manufacturer will replace F.O.B. its factory any of its products sold to the Distributor under this agreement which are found defective in material or workmanship, provided such claim is made within one year from shipment. It is agreed and understood that such replacement of the defective products on the above basis is the limit of the Holophane Company's responsibility and that no other claims can be allowed.

[fol. 401]

Duration

This agreement becomes effective February 1, 1945, and shall remain in force from year to year thereafter, subject,

however, to cancellation on sixty (60) days' notice in writing by either party to the other.

In witness whereof, the parties hereto have signed this agreement by their duly authorized officers, this 30th day of January 1945.

Holophane Company, Inc., By (S.) Charles Franck, President, The Art Metal Company, By (S.) G. E. Glatthar, President.

Attest:

(S.) Alma L. Rustin, Secretary.

Attest:

(S.) Carl F. Glatthar, Secretary.

[fol. 402] GOVERNMENT'S EXHIBIT 38

Holophane Lens Lighting Distributors agreement between HOLOPHANE COMPANY, INC., of 342 Madison Avenue, New York, N.Y., hereinafter called the "Manufacturer", and COLUMBIA ELECTRIC AND MANUFACTURING COMPANY, of W. 1024 Ide Avenue, Spokane 5, Washington, hereinafter called the "Distributor".

Whereas the Distributor desires to become one of the Distributing Outlets for Holophane Lenses (principally prismatic plates), for use with Fluorescent Lighting Equipment, hereinafter called "Fluorescent Lenses", as set forth in Schedule A and no other lenses, and

Whereas it is the desire of both parties to make the marketing of the Manufacturer's Fluorescent Lens products more effective,

Now, therefore, in consideration of the covenants herein contained and the sum of One Dollar ($1.00) by each party to the other paid, the receipt of which is hereby acknowledged, the parties to this contract agree:

Territory

The Distributor will represent the Manufacturer as Fluorescent Lens distributor in the States of Washington, Oregon, California, Idaho, Montana, Nevada, Utah, Colorado, Wyoming, Arizona and New Mexico, but in no

other state, territory or country. The export of Holophane Fluorescent Lenses to Canada, Central or South America, or any foreign or other export countries is not permitted.

Price and Terms

The Manufacturer agrees to sell and the Distributor agrees to purchase from the Manufacturer such Fluorescent Lenses as the Distributor may from time to time order [fol. 403] from the Manufacturer for the period under which the agreement continues, at prices and terms as set forth in Schedule A annexed hereto and made a part hereof. The Manufacturer reserves the right on thirty (30) days' notice in writing to the Distributor to change the above terms in accordance with any general price and terms alteration which it may establish generally or nationally in relation to its sale of lenses.

It is understood and agreed, however, that this agreement shall only continue provided that Distributor's purchases from the Manufacturer of the articles covered by this agreement shall reach Five Thousand ($5,000.00) Dollars net for the first year and Five Thousand ($5,000.00) Dollars net annually thereafter.

This distributorship is granted solely for the sale of Holophane Fluorescent Lenses as part of an equipment manufactured and sold by the Distributor and such lenses shall only be bought in connection with such equipment or as replacements and shall not be bought and resold alone as merchandise by the Distributor.

It is understood and agreed that the Manufacturer from time to time manufactures and sells certain of its own special units and such units are not included in the products to be marketed and sold by the Distributor.

If the Manufacturer at any time shall have any doubt about the Distributor's financial responsibility, the Manufacturer may decline to make further deliveries hereunder until the Distributor shall have satisfied the Manufacturer of the Distributor's financial responsibility (which satisfaction is not to be unreasonably withheld), or shall have paid [fol. 404] in advance for such further deliveries.

It is also understood and agreed by the Distributor that there presently exists a backlog of orders received by the

Manufacturer, that in addition the Manufacturer from time to time receives orders in excess of production. This situation, as well as strikes, acts of God, etc. may prevent immediate delivery on orders. While the Manufacturer shall endeavor to grant fair distribution to all distributors, delay in shipment shall not be considered a breach by the Manufacturer rendering the Manufacturer liable to damages.

Other Distributors

This is not an exclusive agreement and the Manufacturer reserves the right to appoint other distributors in the same or other territories.

Trade Endeavor

The Distributor will use reasonable endeavors to employ Holophane Fluorescent Lenses coming under this agreement with its own product wherever possible. The Distributor also agrees to catalogue and sell such Holophane Lenses in connection with the Distributor's product and will promote the sale of such units using Holophane Fluorescent Lenses by all reasonable commercial means.

The Distributor further agrees that it will be part of its policy in lighting generally and comprehensively to use reasonable endeavor to recommend, publicize, promote and sell Holophane Fluorescent Lenses whether made of glass or other material and to provide sincere and compre- [fol. 405] hensive field support for the proper application of such Holophane Lenses through the efforts of trained engineering representatives.

It is understood and agreed that blueprints and samples of distributor's units employing Holophane Fluorescent Lenses are to be approved by the Manufacturer before they are marketed. Material employed in Distributor's units shall be first-class and any change of material by the Distributor shall likewise be submitted to the Manufacturer. All advertising matter referring to equipment embodying Holophane Fluorescent Lenses shall be forwarded to the Manufacturer for approval prior to publication.

Trademark

The Manufacturer markets its products under the trademark HOLOPHANE and other special trademarks (including the trademark CONTROLENS) indicating its manufacturer, which are acknowledged by the Distributor to be valid trademarks and the exclusive property of the Manufacturer.

It is anticipated that the special trademarks which have been chosen by the Manufacturer for certain of its lenses shall be made known to the Distributor and shall be used by the Distributor in marketing the units and wherever such other special Holophane trademarks are used they shall be designated as a Holophane product. For instance, the Distributor shall always refer to the lens as a Holophane CONTROLENS. No right is given to use the Manufacturer's trademark HOLOFLUX.

If any trademark is applied by the Distributor to the products of the Manufacturer during the period of this contract, the Distributor shall not have the right thereafter to apply such trademark to the product of any other manufacturer.

[fol. 406]

Stock

The Distributor agrees to use reasonable efforts to maintain in its warehouse at all times a minimum stock of Holophane Fluorescent Lenses consistent with the ability to serve its normal business from its own warehouse rather than by direct shipment from the Manufacturer's factory, and to renew this stock whenever it falls below the minimum amount.

Manufacturer's Engineering Services

The Manufacturer undertakes:

(a) to maintain a competent engineering staff and to provide highly specialized engineering services in the design of Holophane lenses and equipment to the end that the technical lighting requirements of the field application for which the complete equipment is intended will best be served.

(b) to aid in the public education of the right use of

Holophane lenses through the medium of advertising, technical publicity and talks to selected groups, and in general to assist in the overall promotion and public acceptance of its lenses; to maintain this service to the Distributor's headquarters.

(c) to extend to the Distributor its engineering experience in the optical design of its equipment.

Warranty

The Manufacturer will replace F.O.B. its factory any of its products sold to the Distributor under this agreement which are found defective in material or workmanship, provided such claim is made within six months from this shipment. It is agreed and understood that such replacement of the defective products on the above basis is [fol. 407] the limit of the Holophane Company's responsibility and that no other claims can be allowed.

Duration

This agreement becomes effective and shall remain in force from year to year thereafter, unless cancelled as hereinafter provided.

Cancellation

This agreement may be cancelled at the option of either party at any time on thirty days' notice in writing. Such written notice cancelling this agreement shall be by registered mail addressed to the party intended at the address indicated in this agreement. Upon cancellation of this agreement, the Manufacturer shall make deliveries to the Distributor on orders received up to the date of cancellation (subject, however, to the last paragraph under the heading "Price and Terms" at the top of page 3) and having done so shall not be otherwise liable to the Distributor hereunder.

In witness whereof, the parties hereto have signed this agreement by their duly authorized officers, this 11th day of April, 1949.

Holophane Company, Inc., By (S.) Chas. Franck, President, Columbia Electric and Manufacturing

Company, By (S.) Walter A. Toly, Vice President.

Attest:

(S.) Alma L. Rustin, Secretary.

Attest:

(S.) John Ruffallo, Secretary.

[fol. 408] State of New York,
County of New York, ss.:

On this 25th day of April, 1949, before me personally came Charles Franck, to me known, who, being by me duly sworn did depose and say that he resides at 900 N. E. 100th Street, Miami 38, Florida, that he is the President of the Holophane Company, Inc., the corporation described in and which executed the foregoing Agreement, that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; and that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

(S.) Merrill S. Winslow, Notary Public in the State of New York, Residing in Queens County, Queens Co. Clk. No. 3080, Reg. No. 272-W-0. Ctf. filed N.Y. Co. Clk. No. 514, Reg. No. 595-W-0. Commission expires March 30, 1950.

State of Washington,
County of Spokane, ss.:

On this 11th day of April, 1949, before me personally came Walter A. Toly, to me known, who, being by me duly sworn did depose and say that he resides at 1828 N. Cook in Spokane, Washington that he is the Vice Pres. of Columbia Electric and Manufacturing Company, the corporation described in and which executed the foregoing Agreement, that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; and that it was so affixed by order of the

Board of Directors of said corporation, and that he signed his name thereto by like order.

——— ———.

[fol. 409]

Schedule A

Cat. No.	Finish	Description	Std. No.	Quantity Ship. Wt.	Net Price Each.
9010	CL	6½" x 12" "F" Concentrating	8	20	.91
9020	CL	8½" x 12" "F" Intensive	12	33	1.02
9015	CL	11" x 12" "F" Intensive	8	35	1.35
9030	CL	10⅞" x 12" Curved F	4	14	1.90
9031	CL	10⅞" x 11¾" Curved F with end wall	4	16	2.05
9100	CL	12" x 12⅞" "F" Curved Intensive Lens	4	20	2.05
11F12	CL	11" x 12" "F" Intensive Lens	8	35	1.20
11F12B	CL	10⅞" x 11⅞" "F" Intensive Lens	12	50	1.20
11F12C	CL	11" x 12" "F" Concentrating	8	35	1.20
11F12-E	CL	11" x 12" "F" Extensive Lens	8	35	1.20
9099	CL	23¾" Reflector-Refractor	4	20	1.77

Prices are for standard crystal glass. If special finishes, colors, or treatments are required, please communicate with the Holophane Company.

Prices based on standard quantities. For less than standard quantity, add 10%. All prices are f.o.b. factory, Newark, Ohio, packing included.

April 5, 1949.

[fol. 410] GOVERNMENT'S EXHIBIT 39

Holophane Distributing Jobbers' Agreement between Holophane Company, Inc., 342 Madison Avenue, New York City, hereinafter called the Manufacturer, and O. R. Evans and Bro., Inc., hereinafter called the Distributor.

In consideration of the covenants herein contained and the sum of One Dollar ($1.00) by each party hereto to the other paid, the receipt of which is hereby acknowledged, the parties to this contract agree:

The Distributor will represent the Manufacturer as distributing jobber in the territory hereinafter defined upon the following terms.

Purchases made under this contract will be invoiced at prices set forth on Distributor's cost sheet DCS-1.47-1M (applying to Datalog D.47).

Items Not Fully Scheduled on Cost Sheets

This agreement applies only to sales of material manufactured and/or sold by the manufacturer and which are listed on above cost sheets with definite prices. It does

not apply to Street Lighting Refractors which are not sold through distributors.

Shipping Point

Deliveries are f.o.b. point of shipment.

Terms

Conditions of payment are 1%, 15 days or net 30 days from date of shipment, all material furnished according to the Manufacturer's general conditions of sale.

Price Changes

In the event that the manufacturer's prices or terms of sale change during the period of this contract, such decrease or increase will apply on all purchases made by the distributor during the balance of the contract period.

Packing

There are no extra charges for packing.

Warranty

The manufacturer will replace f.o.b. its factory any of its products sold to the Distributor under this agreement which are agreed to be found defective in material or workmanship, provided such claim is made within six months from shipment. It is agreed and understood that such replacement of the defective products on the above basis is the limit of the manufacturer's responsibility and that no other claims can be allowed.

City Sales Taxes

All Holophane material being for resale by you is not subject to local tax to be collected by the manufacturer.

Territory

These prices apply only on shipments into the following territory:
Metropolitan Area, Washington, D. C., and Charlottesville, Virginia.

Export

Holophane is sold under this agreement on the understanding that it is not to be resold for export; special con-

ditions of sale on export shipments will be quoted on request.

Commissions

This is not an exclusive agreement and the manufacturer reserves the right to appoint other distributors in this or other territories. Certain cases may arise where it would be advisable for the manufacturer to accept, ship and bill orders direct to customers in this territory. It is fully agreed, therefore, that this agreement does not obligate the manufacturer to render credit or commission to the distributor for such sales.

Stock

The distributor agrees to maintain in his warehouse at all times, a minimum stock of $2,500.00 net value and to renew this stock whenever it falls below the above agreed upon minimum amount, otherwise this contract is subject to immediate cancellation at the option of the manufacturer.

Sales Effort

The distributor agrees to catalog the manufacturer's products and to push their sales by sufficient selling and advertising effort to turn over the above investment four times annually and the manufacturer agrees to aid this effort by cooperation on the part of his salesmen and/or other sales promotion.

The distributor also agrees to instruct his salesmen to energetically push the sales of these products and to train his men with the assistance of the manufacturer's representatives, to become specialists in selling Holophane material.

Duration

This agreement becomes effective July 1, 1951, and may be cancelled by sixty days' notice in writing by either party to the other.

Manufacturer's signature, Holophane Company, Inc., By Clarence C. Keller.

Distributor's signature, O. R. Evans and Bro., Inc., By P. A. Davis, V.P.

[fol. 411] GOVERNMENT'S EXHIBIT 40

LINE MATERIAL COMPANY

General Offices, Milwaukee, Wisconsin

March 25, 1943.

Mr. A. D. Cameron, Vice Pres.,
Holophane Company,
342 Madison Avenue,
New York City, N. Y.

Subject: Distributor's Agreement

Dear Mr. Cameron:

The tentative Distributor's Agreement Form left by Mr. Rolph on his recent visit has been studied and is unsatisfactory to us in a number of points which we outline as follows:

Territory

The territory which your outline, namely continental America north of Panama Canal and adjacent islands (but not including the West Indies), the Philippine Islands, the Republic of Cuba and the Empire of Japan, is entirely too restrictive.

As you know, we export considerable quantities of our materials to all of South America, India and Thailand, and in order to be satisfactory any such agreement must include these territories. These territories are included in the agreement with the export firms of several of our domestic competitors and the exclusion of such territory would work an undue hardship upon us.

Prices and Terms

This section is 100% in favor of the Holophane Company. While in effect it is recognized that the Holophane Company has in the past set the price on Holophane items when sold separately, we do not believe that in the future this will be of as much value since we find that replacement refractor sales are diminishing and in the case of a sale of complete units there is no way of segregating the price of the refractors and the luminaires.

As regards the clause requiring the purchase of our entire requirements for Prismatic Street Lighting Equipment from the Holophane Company, will state that it has always been our policy to do this. However, to be specific, we can see where the inclusion of such a clause [fol. 412] might be of mutual disadvantage in that it could very conceivably force us to change our constructions on which we have spent considerable for promotion.

Other Distributors

In connection with your reservation to appoint other distributors, we feel that we should be kept fully informed as to any changes in your distributor setup.

Trade Endeavor

It has been, as you know, the policy of Line Material Company to promote the sale of Holophane equipment on a national scale. However, we will continue as always to promote to the best suited to any given application. Our failure to do this would not only react to our own disadvantage, but to yours as well.

Trade Marks

On the subject of trade marks it would seem that Holophane Company is now adequately protected by the proper registration of the marks which you have established.

Regarding the relinquishment after culmination of the contract to trade names which we had established, can assure you that under no circumstances would we agree to this.

Stock

On the matter of stock, the Line Material Company has always maintained a large inventory of Holophane Street Lighting parts. However where turn quantities are involved, we have in the past and shall continue to expect your company to ship these direct to the job site. As we see it, this works no hardship on you and at the same time results in a saving in freight charges and serves to relieve our transportation facilities of unnecessary and unwarranted freight movements. We will reserve the right to

determine what constitutes the desirable amount of material to be held in our stock.

Warranty

The limitation of the Holophane Company's responsibility to the replacement of defective material is not acceptable from our standpoint, neither do we believe that any such agreement between ourselves would give you the protection which you apparently seek to obtain.

[fol. 413] In the matter of complaints we will seek to protect the Holophane Company's interest as well as our own, however, beyond this point we do not care to go. This provision as worded by you would, for example, place the entire burden as a result of liability due, let us say, the defective glassware falling and injuring an individual, entirely on Line Material. Such limitation would obviously be unfair.

The above comments cover practically every section of your proposed contract and needless to say, it will have to be completely rewritten in order to be agreeable to ourselves.

While we are not opposed to having a written understanding, nevertheless our companies have operated without such an agreement for many years with very satisfactory relationship.

We have promoted Holophane equipment with satisfaction because the service and facilities which your company has been able to render has made it profitable for us to do this. As we see it, our future relationship is predicated entirely upon your ability to continue supplying such services, and the writing of a formal agreement will not alter such relationship to any degree.

Yours very truly, Line Material Company, M. C. Harch, Sales Engineer.

MCH:LT.

[fol. 414] GOVERNMENT'S EXHIBIT 41

Mr. Rolph.

Received

HOLOPHANE COMPANY, INC.
Newark, Ohio

April 27 A.M.

Noted Referred R Ans'd SRW

April 26, 1943.

Line Material Co.,
Mr. M. C. Harsh,
Milwaukee, Wis.

Dear Mr. Harsh:

Re: *Distributors' Agreement.*

I am sorry I missed seeing you last week. I received your message in my room too late to call you that night. I had an opportunity to discuss your letter of March 25th with Carl the next morning and this is in confirmation.

There is nothing included or intended in this proposed agreement which differs in any way from the details of the verbal agreement under which we have been operating all these years. The only reason for putting it in writing was that there are one or two relatively new manufacturers—Pemco, and Joslyn, who have not had the background of years of experience with the details of this relationship and for whom we should reduce this to writing. The other reason is that many of these conditions have been outlined to the three older manufacturers in connection with specific developments and then that correspondence goes in the file and it is difficult to find later. As long as there was nothing different in the written agreement than in the verbal understanding, there was an advantage to have it a matter of record. Now as to the questions you raised:

Territory. Based on our agreement with the other Holophane Companies our own territory is limited as we outlined. We cannot ship into any outside territory. If the other street lighting manufacturers are able to export into other countries it is because they have made a direct arrangement with the other Holophane Company which con-

trols the territory in question. If we can be of service to you in connection with such correspondence, we will be very glad to do it, but while we may be able to help you it has always been true that the outside territory belongs to the other Holophane Companies and arrangements for export into those countries has to be made with them and not with us.

Prices and Terms. This reference is entirely to the price and terms at which we sell to you. We have never, nor do we propose now, to attempt to regulate the price at which you resell our refractors.

As you state, it has always been your policy to purchase your entire requirements of prismatic street lighting equipment from us and we would ask and hope for nothing more than that in the future. It is possible that other glass [fol. 415] companies who have been driven out of their own business by the war, may attempt to make some prismatic pieces. They have not had previous experience nor have they any conception of problems of the street lighting manufacturers and the advantages of contributing to a situation which will be stable and which recognizes the necessary promotional work. We still feel that the greatest advantage and the best protection to your own program will come from a continuance of the same policy which has been so successful in the past.

Other Distributors. We agree thoroughly with your reservation. We would expect not only to keep you fully informed as to any changes or additions but also to do this before instead of after the fact—just as we always have in the past.

Trade Endeavor. I believe we are in complete agreement on this point particularly if we change the word "possible" to "justifiable" in the third line. We have never expected our products to be used except where it will provide a creditable improvement in performance over any other type of street lighting unit.

Trade Marks. Protection of a trade mark comes not only from proper registration but also from proper use. We merely wish to make a record of proper use. Particularly for the newer manufacturers who may not be familiar with all our trade marks. Even in the case of some of the older

manufacturers there is from time to time an unwitting misuse which perhaps is our fault, if we do not make clear what is correct.

The statement regarding the relinquishment of trade marks had solely to do with a trade designation which you might adopt to describe one of our products. This does not apply, of course, to a trade mark which describes one of your products. I do not know at the moment of any case which applies to you but for instance, Westinghouse uses words like Hi-Lux, Mi-Lux, etc. These apply not to one of their complete units but to one of our refractors. They have always agreed that if that particular refractor went out of production or out of use, that the name itself would disappear. It would not be fair for you or for us to use this name for another product after the public had been educated to associate the name with the original product. The only possible application to any of your own names might be in the case of Prismalite. If for instance, you discontinue the prismatic reflector and the prismatic refractor, then I doubt whether you would want to apply the name to a unit which had no prismatic features. Actually, however, that is another subject which we did not intend to cover in the agreement. All we were talking about were trade names which apply to one of our products and not to one of your products.

Stock. Here again, I think we are in complete agreement. We have no thought of refusing to recognize conditions under which both companies agree that direct shipments are justifiable. Under present war conditions it has been generally impossible for manufacturers or distributors to maintain stocks. We do not have in mind that this condition when it changes will be any different than in the pre-war period. Undoubtedly, all manufacturers will return to the policy of maintaining the minimum stock consistent with their ability to serving their normal business.

Warranty. This limitation of our responsibility has always been in effect and applies to all our products since I imagine it is exactly as your own warranty except perhaps yours covers a period of one year after shipment, [fol. 416] where ours was stated as covering six months.

Our limitation can be the same as your own, if that is better from your standpoint.

We like the expression of confidence contained in your last paragraph. The basis of any relationship must be that it is mutually profitable. In our own conception we feel that this involves more than just selling our product to you at a price which yields us a profit; in this street lighting field we intend to continue to be more than just a supplier of a glass accessory. We have an opportunity to provide engineering means to produce types of light distribution needed to best serve the changing requirements of streets and highways. For instance I hope we will be of considerable service to your engineers in providing the solutions to the problems which will be imposed by post war conditions. Shat is a feature of our relationship which we believe will be of considerable value to you as a manufacturer and which we certainly expect to maintain.

Yours very truly, Holophane Company, Inc., ——
—— ,Vice President.

AdCameron:MAC.
cc MG TWR.

[fol. 417] GOVERNMENT'S EXHIBIT 42

Air Mail

April 8, 1949.

Holophane Limited,
Elverton Street, Vincent Square,
London S. W. 1, England.
Att.: Mr. R. J. W. Briddon.

Dear Mr. Briddon:

We have received an inquiry from Argentine, South America, for a substantial number of bowl Refractors through the I. G. E., Schenectady, New York, asking for permission to have these shipments made from England or France.

We have definitely advised them that we would not permit this and we ask, therefore, that you advise your

organization that if any such inquiries are received that they be referred to this company.

Thanks for your usual cooperation.

Very truly yours, Holophane Company, Inc., Clarence C. Keller.

mn.
cc CF.

[fol. 418] GOVERNMENT'S EXHIBIT 43

Air Mail

April 8, 1949.

Holophane Company,
156 Haussman Blvd.,
Paris, France.

Gentlemen:

We have received an inquiry from Argentine, South America, for a substantial number of bowl Refractors through the I. G. E., Schenectady, New York, asking for permission to have these shipments made from England or France.

We have definitely advised them that we would not permit this and we ask, therefore, that you advise your organization that if any such inquiries are received that they be referred to this company.

Thanks for your usual cooperation.

Very truly yours, Holophane Company, Inc., Clarence C. Keller.

mn.
cc CF.

[fol. 419] GOVERNMENT'S EXHIBIT 44

Air Mail

April 18, 1950.

Holophane Limited,
Elverton Street,
Vincent Square,
London S.W. 1, England.

Attention: Mr. R. J. W. Briddon, Manager, Export Department.
Subject: *Export Inquiries.*

Gentlemen:

Reference is made to your letter of February 14 addressed to the attention of our Mr. G. G. Rae, respecting the subject matter. We are pleased to enclose herewith our CM No. 517 for $40.24 for material shipped by Day-Brite Lighting, Inc. into Ankara, Turkey, and CM No. 518 for $219.39 for material shipped by us for account of American Arabian Oil Company. In addition, we also enclose our CM No. 512 for $11.63 for material shipped by us for account of Metro Theatre, Egypt. There was no inquiry in your letter respecting this credit.

As to Turtle & Hughes, Inc., please refer to our letter of September 22, 1949 and our letter of October 4, 1949 to International General Electric, in copy to you under subject of Sterling Refinery, England, whereby this matter has been referred to you. We also refer you to your letter of September 20 to our Mr. Rae. As at the present writing, we have no information whatsoever respecting Standard Oil Company in Aruba and H. A. Kuljian Corporation and Central Electricity Commission, Simla, India.

Very truly yours, Holophane Company, Inc., ——
——, Treasurer.

E. Ponkop:m.

Enc. cc: GGR.

334.

[fol. 420] GOVERNMENT'S EXHIBIT 45

HOLOPHANE LIMITED
Scientific Illumination Experts

Elverton Street, Vincent Square, London S-W-1
Telegrams: Holophane Sowest, London
Telephone: Victoria 8062 (4 Lines)

Works Gateshead Our Ref. BIWB/BR. Your Ref.

14th February, 1950.

Holophane Company, Inc.,
342 Madison Avenue,
New York 17, U. S. A.
For the attention of G. G. Rae Esq.

Export Enquiries

Dear Sirs,

During the past year we have agreed to you quoting various customers for equipment required for countries within our zone of interest, and we are wondering if any progress has been made with the undermentioned jobs:

June 16th, 1949. DayBrite Lighting, Inc. and airport in Ankara, Turkey.

July 21st, 1949. Turtle & Hughes, Inc. and Esso Standard Oil Company.

July 29th, 1949. Arabian American Oil Company.

July 21st, 1949. Standard Oil Co. in Aruba.

December 14th, 1949. H. A. Kuljian Corporation and Central Electricity Commission, Simla, India.

We shall be glad to have your advice in due course.
(line of copy here illegible)

Yours very truly, Holophane Limited, R. J. W. Briddon, Manager, Export Dept.

[fol. 421]

GOVERNMENT'S EXHIBIT 46

STATEMENT

HOLOPHANE COMPANY, INC.
342 MADISON AVENUE
NEW YORK 17, N. Y.

June 30, 1950

HOLOPHANE LIMITED
ELVERTON STREET
VINCENT SQUARE
LONDON S.W.1, ENGLAND

Date	Description	Debits	Credits
December 31, 1949	Balance due your account		$1,703.08
1950			
April 4	Payment to Barclay's Bank, Ltd.	$1,203.08	
April 17	Credit No. 512—Material shipped into Egypt		11.63
April 17	Credit No. 517—Material shipped into Turkey		40.24
April 17	Credit No. 518—Material shipped for account of American Arabian Oil Co.		219.39
May 26	Payment to Barclay's Bank, Ltd.	671.26	
June 30	Credit No. 678—Material shipped into Union of South Africa		156.17
		1,874.34	2,130.51
June 30, 1950	Balance due your account	256.17	
		$2,130.51	$2,130.51

E. Ponkop:k
August 11, 1950

[fol. 422] GOVERNMENT'S EXHIBIT 47

June 5, 1951.

International General Electric Co., Inc.,
Schenectady 5, New York.
Attention: Mr. A. Koaler.
Reference: ADK—50416.

Dear Sir:

In reply to your letter of May 31st, the sale of our products in Oslo is handled through Holophane Company, Limited, Elverton Street, Vincent Sq., London, S.W.1, England and we respectfully refer your client to the London office of the Holophane Company, Inc., who will be glad to give them full information on comparable products of their manufacture.

We were interested to learn that our March 26th advertisement in "Electrical World" reached such a wide circulation and hope that, in the event of future inquiries, we may be in a position to serve you directly.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.

[fol. 423] GOVERNMENT'S EXHIBIT 48

March 29, 1949.

International General Electric Co.,
Schenectady 5, New York.
Att.: Mr. G. H. Gretz, Apparatus Division.

Re: N E & E Company for export to New Zealand.
Your File PB-75430.
Your Reference GHG-112829.

Gentlemen:

This acknowledges your inquiry of March 25th regarding a quotation on a quantity of 100 of your No. 2346129, our No. 4634 Refractors for export to New Zealand.

We suggest you obtain your quotation for these Refractors from Holophane Ltd., London.

Very truly yours, Holophane Company, Inc., ——
——, Sales Department.

DKettles:MN.

cc CF.

Holophane, London.

[fol. 424] GOVERNMENT'S EXHIBIT 49

Air Mail

August 2, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1, England.
Subject: Bokoro Steam Power Station, India.

Gentlemen:

The illumination design for this plant has been handled by the General Electric Company in Schenectady, New York. When bids were taken, we expressed our desire to have the lighting order handled through your organization but the supervising engineer on the site insisted upon acceptance of our products for this project.

Under the circumstances, we would like your permission to accept an order for the following material:

51	No. 02328	37	No. 830
20	No. 02470	2	No. 832
8	No. 02472	33	No. U-826
21	No. 02480	36	No. 043386
1	No. C-2173	36	No. 0871 bracket

The items involved are essentially industrial equipment and the handling of this order would come within the inter-company buying agreement.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.

(Here follows 1 Photolithograph, side folio 425)

Bokaro Steam Power Station India

51	02226
20	02470
8	02472
21	02480
1	C-2173
37	830
2	832
33	U-826
36	043386
36	0871 Sunbeet

material specified by G.E. Board Eng -

(5)

425 50

[fol. 426] GOVERNMENT'S EXHIBIT 50

HOLOPHANE LIMITED

Scientific Illumination Experts

Elverton Street, Vincent Square, London S. W. 1
Works Gateshead

Our Ref. RJWB/BL Your Ref. GGRae/ap

10th August, 1951.

Messrs. Holophane Company, Inc.,
342 Madison Avenue,
New York 17, N.Y., U.S.A.

For the attention of Mr. G. G. Ray

Dear Mr. Ray,

Re: Bokoro Steam Power Station, India

Thank you for your communication dated 2nd August and in reply, we have no objection to your accepting this order and trust you will reserve our usual commission in accordance with the inter-company trading agreement.

You will remember that some short while ago I referred this matter to you but, subsequently, the International General Electric Co. in Schenectady formed the opinion that the clients in India would prefer to buy in this country and at that time we told them that we did not manufacture the fittings as specified and could only put forward alternatives. So if you accept the order, this will put the matter right.

Yours faithfully, Holophane Limited, R. J. W. Briddon, Manager, Export Department.

[fol. 427] GOVERNMENT'S EXHIBIT 51

Air Mail

January 3, 1952.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1., England.
Subject: I.G.E. Order No. IY-620922X3.

Gentlemen:

Please refer to our letter of December 20th, addressed to the International General Electric Co., Inc., New York City, copy of which was sent to you.

Will you please let us know if it will be agreeable with you for us to handle this order calling for 50 No. 691-AL-HS and 30 No. 693-AL-HS for shipment to South Africa.

Your prompt reply will be appreciated so that we may take action on this order one way or the other.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.

[fol. 428] GOVERNMENT'S EXHIBIT 52

Air Mail

December 31, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1., England.
Subject: Chas. T. Main, Inc., 230 Congress St., Boston, Mass.

Gentlemen:

The above consulting engineer in Boston is quite anxious to receive a copy of your Datalog to assist him in specification work abroad. A similar arrangement was worked out a little while ago with the Stone & Webster Engineering Corporation, also in Boston, which enabled them to specify products of your manufacture in Iran.

It will be perfectly satisfactory with us if you choose

to mail your Datalog directly to Mr. C. W. Fletcher of the above organization, sending a copy of your letter of transmittal to us.

With best wishes for the coming year,

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
cc: EJP.

[fol. 429] GOVERNMENT'S EXHIBIT 53
Air Mail

December 8, 1950.

Holophane Company,
156 Boul. Haussmann,
Paris (VIII) France,

Gentlemen:

We are enclosing an inquiry from J. Schwab, Strasbourg, requesting a copy of "Guide to Lighting Educational Institutions."

This inquiry is forwarded to you herewith for further handling by you.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
Enc.

[fol. 430] 17 November, 1950.

J. Schwab,
Ingenieur-Architecte E.I.P.,
Strasbourg, Le.,
3, Rue St. Maurice.

Monsieur,

Je vous adresse, inclus, une copie du bon de commande relevé dans "Progressive Architecture", concernant le: "Guide to Lighting Educational Institutions" et vous prie

de bien vouloir m'envoyer un exemplaire de ce volume.

Veuillez agreer, Monsieur, mes salutations tres distinguees.

[fol. 431] GOVERNMENT'S EXHIBIT 54

Export Inquiries—Other Territories
Air Mail

December 13, 1950.

Holophane Company,
156 Boul. Haussmann,
Paris (VIII) France.

Gentlemen:

We have received several requests from customers in the territories you serve for information on Holophane No. 840 unit, illustrated herewith.

Please handle these inquiries as you consider appropriate.

G. Orecchia, Megalux, Via Valeggio, 1. Torino, Italy	Jean J. Chappat Lampes 29 rue de Lisbonne Paris, France	D. R. Arch. Vittorio Terracina Art Director of F L U O C Vicolo Doria 7, Rome, Italy

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.

[fol. 432] G. Orecchia
Megalux
Via Valeggio, 1.
Torino, Italy.

D. R. Arch. Vittorio Terracina
Art director of F L U O C
Vicolo Doria 7,
Rome, Italy.

Jean J. Chappat
Compagnie des Lampes
29 rue de Lisbonne
Paris, France.

[fol. 433] GOVERNMENT'S EXHIBIT 55

Air Mail

May 7, 1951.

Holophane,
156 Boul. Haussmann,
Paris (VIII) France.

Gentlemen:

We are enclosing an inquiry from Mr. Hans F. Thum, Lighting engineer with Philips, Inc., Ludwigsburg, Germany, requesting a copy of the Holophane Datalog.

This inquiry is forwarded to you herewith for further handling by you.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/aj
Enc.

[fol. 434] March 23, 1951.

Hans F. Thum, Lighting Engineer,
With Philips, Inc.,
Stuttgart Branch, Ludwigsburg,
U. S. Zone of Germany,
Friedrichstrasse 9.
Datalog.

[fol. 435] GOVERNMENT'S EXHIBIT 56

Air Mail

May 7, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1., England.

Gentlemen:

We are enclosing an inquiry from J. Mouchly & Sons, Architects and Engineers, Haifa, Israel, requesting a copy of our catalog.

This inquiry is forwarded to you herewith for further handling by you.

Very truly yours, Holophane Company, Inc., —— ——, Export Manager.

GGRae/ap.
Enc.

[fol. 436] COPY

25th April, 1951.

Gentlemen:

As our firm is specializing in illuminating engineering and part of the equipment we are specifying now for different public buildings, hospitals, etc. is of U. S. A. made, we would appreciate, if you could kindly send us data and general information about your products.

We will also appreciate if you will include our firm in your ordinary mailing list.

Faithfully, —— ——.

J. Mouchly & Sons,
Architects and Engineers,
P. O. Box 2051,
Haifa, Israel.

[fol. 437] GOVERNMENT'S EXHIBIT 57

September 4, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S.W.1., England.

Gentlemen:

We are attaching original request from Mr. George W. Lambert, Sydney, Australia, in which he asks for a copy of our Generating Station Lighting book.

This is forwarded to you herewith for further handling by you.

Very truly yours, Holophane Company, Inc., —— ——, Sales Manager.

GGRae/ap.
Enc.

[fol. 438] COPY

66 Thompson Street, Drummoyne,
Sydney, Australia

15th August, 1951.

Dear Sirs;

I am an electrical engineer employed in the Design Office of an electricity supply authority in Australia—the Sydney County Council; recently I was perusing one of the American technical periodicals that are circulated regularly in our organization and I saw the following publication advertised:

Generating Station Lighting.

I should be very much obliged if you could forward this publication to me as it would assist me in my work.
Thanking you in anticipation.

Yours faithfully, George W. Lambert.

[fol. 439] GOVERNMENT'S EXHIBIT 58

September 11, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1, England.

Gentlemen:

We are enclosing original request received from J. W. La Gore, Architect, Auskland, New Zealand, for copy of "Holophane Guide to Lighting Educational Institutions." This request is forwarded to you for further handling.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
Enc.
cc

[fol. 440] GOVERNMENT'S EXHIBIT 59

Air Mail

September 25, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1, England.

Gentlemen:

We are attaching two inquiries for Holophane literature received from customers in the territory you serve.

These are forwarded to you for further handling.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
Enc.

[fol. 441] 9 Lynden Croft, Marston Green,

Birmingham, England

11 Sept. 1951.

Dear Sir:

I shall be much obliged if you would send copies of your engineering folders;

No. 6. Lighting of Switchboards
No. 7. Lighting of generating and sub-stations
No. 12 Lighting Specific for Railroads.

I would mention that I am a member of the Illuminating Engineering Society and am engaged on the lighting of generating station for the British electricity Authority.

Thanking you in anticipation,

Yours faithfully, C. H. Morgan, A. M. I. E. E.

[fol. 442] 3, Chalkhill Road, Wembley Park,
Middlesex, England

11th September, 1951.

Messrs. Holophane Company, Inc.
342 Madison Avenue, New York 17,
New York, U. S. A.

Dear Sirs:

As a student of Illuminating Engineering in this country, I should be pleased to receive from you any details of your lighting fixtures that you may be able to furnish together with any technical literature on them.

Thanking you in anticipation.

Yours faithfully, S. Doo.

[fol. 443] GOVERNMENT'S EXHIBIT 60

Air Mail

October 15, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, SW. 1, England.

Gentlemen:

We are enclosing original request received from Norsk Hydro-Elektrisk Kvaelstofaktieselskab, Oslo, Norway for Holophane literature.

We forward this to you for further handling.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
Enc.

[fol. 444] Norsh Hydro-Elektrisk Kvaelstofaktiesedskab
Oslo, Solligt. 7

2nd October 1951.

Gentlemen:

Re: *Controlens for Fluorescent Lighting.*

Referring to our letter of 18th July this year we regret not having heard from you in this matter and ask you to kindly send us illustration, price, as well as technical datas for Controlens No. 9200.

Very truly yours, Norsk Hydro-Elektrist Kvaelstofaktieselskab.

[fol. 445] GOVERNMENT'S EXHIBIT 61

Air Mail

October 30, 1951.

Holophane, Limited,
Elverton Street, Vincent Sq.,
London, S.W. 1, England.

Gentlemen:

We are enclosing original request received from G. Birch-Lindgren, Architect, Stockholm, Sweden, for copy of "Architect's Guide to Hospital Lighting."

This request is forwarded to you for further handling.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
Enc.

[fol. 446] GOVERNMENT'S EXHIBIT 62

December 5, 1951.

Holophane,
156 Boul. Hassmann,
Paris (VIII) France.

Gentlemen:

We are forwarding to you a request received from Mr. Leo Schevenhels, Assistant Librarian, Stedelijke Biblio-

theken, Antwerpen, for a copy of our Architexts on Library Lighting.

We are attaching a copy of this pamphlet and ask that you handle this request in the usual manner.

Very truly yours, Holophane Company, Inc., ——, Export Manager.

GGRae/ap.
Enc.

[fol. 447] October 15, 1951.

Stedelijke Bibliotheken, Antwerpen,
Openbare Bibliotheken, Blindestraat 19.

Dear Sirs:

We should feel very obliged if you would forward us a copy of "Architexts".

With many thanks beforehand and kindest regards,

Very truly yours, Leo Schevenhels, Assistant Librarian.

[fol. 448] GOVERNMENT'S EXHIBIT 63

December 5, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1, England.

Gentlemen:

We are in receipt of a request from Mr. L. D. Wright, Industrial Safety Services Pty, Ltd., Melbourne for data on industrial and commercial lighting.

This request is forwarded to you herewith for further handling.

Very truly yours, Holophane Company, Inc., ——, Export Manager.

GGRae/ap.
Enc.

[fol. 449] Industrial Safety Services Pty, Ltd.

11-19 Bank Place C 1, Reg. Office, Melbourne

Mr. H. L. Logan;
Holophane Company, Inc.,
342 Madison Avenue,
New York 17, N. Y.

Dear Mr. Logan:

I would greatly appreciate receipt of copies of your publications on industrial and commercial lighting. For some years I have been the head of a Commonwealth research organization, but now return to the lighting field as a consultant. I am writing to you personally as you are interested in I.E.S. affairs over there and I am National President here.

Prior to the war, the Holophane data was particularly valuable, but I have not any of your recent booklets, catalogues or design data. I hope that we will soon be receiving more extensive supplies of American goods on the Australian market.

With kind regards,

Yours sincerely, L. D. Wright.

ap.

[fol. 450] GOVERNMENT'S EXHIBIT 64

December 12, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1, England.

Gentlemen:

We have received the attached inquiry from King Edward's Hospital Fund for London, requesting a copy of our hospital lighting book.

This request is forwarded to you for further handling.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
Enc.

[fol. 451] COPY

King Edward's Hospital Fund for London,
Division of Hospital Facilities,
10 Old Jewry,
London, E. C. 2, England

Copy of Hospital Book.

[fol. 452] GOVERNMENT'S EXHIBIT 65

Air Mail

June 12, 1951.

Holophane, Ltd.,
Elverton Street, Vincent Sq.,
London, S. W. 1, England.

Gentlemen:

We are enclosing an inquiry from Upper Ganges Valley Electricity Supply Co., Amroha, India, requesting data on generating station lighting and a copy of "Guide to Lighting Educational Institutions."

This inquiry is forwarded to you herewith for further handling by you.

Very truly yours, Holophane Company, Inc., ——
——, Export Manager.

GGRae/ap.
Enc.

[fol. 453]

Upper Ganges Valley Electricity Supply Co., Ltd.,
Martin Burn, Ltd., Managing Agents
P. O. Box No. 19, Amroha

23-4-51.

Holophane Co., Inc.,
342 Madison Ave.,
New York 17, N. Y.

Dear Sir:

We shall be thankful if you kindly send the following pamphlets for our reference at your earliest convenience.

Guide to Lighting Educational Institutions

Data on General station lighting,

Further, we request you to send us literations and cataloges for efficient streeting, if you have any.

Thanking you and assuring you of our best cooperation at all times,

Yours faithfully, —— ——.

B. Chattinger BSC, Assoc. A. I. E. E. Dist. Main Engr., P. O.—Amroha, Dist. Moradaban, India.

[fol. 454] GOVERNMENT'S EXHIBIT 66

January 8, 1951.

Gentlemen:

We have come to learn that you are one of the leading manufacturers and the exporters for all kinds of lighting fixtures in which we are vitally interested in as the importers for the same.

We will be much obliged if you will be kind enough to send us your latest catalog along with your latest export quotations possibly C & F any of the Persian Gulf Parts. Please do inform us in your first letter the earliest delivery period, the amount of each style available and all other information pertaining to the imports of your items. Please do add a five percent on all your quotations.

Please be advised that we are one of the leading importers of varoius kinds of lighting fixtures in glass and in crystals and that we will be glad to co-operate with you in familiarizing this market with your manufactured goods provided that your quotations and grade of manufactures are competitive. We are sure that with your cooperation we can do a volume business in this country which will no doubt be for our mutual benefit. It will be of interest to you when you hear that the imports of these items are free and no import license is required any more.

In closing we take this opportunity to wish you a very Happy and Prosperous New Year of 1951 and do hope that

in this New Year we will come to co-operate for a better and for a volume business.

Hoping to be favored with your earliest reply, we remain

Very truly yours, The Continent Trading Company,
—— ——, Import Dept.

MErmend/ne.

The Continent Trading Co., Sebze Meydam, Insurance Building No. 41, Teheran, Iran.

[fol. 455] GOVERNMENT'S EXHIBIT 67

HOLOPHANE LIMITED

Scientific Illumination Experts
Elverton Street, Vincent Square, London S-W-1
Telegrams: Holophane Sowest, London
Telephone: Victoria 8062 (4 Lines)

Works Gateshead

Our Ref. CHB/VR Your Ref.

27th February 1948.

Holophane Company, Inc.,
342 Madison Avenue,
New York, N. Y. 17.

For the attention of Mr. Charles Franck.

Dear Mr. Franck,

We have an enquiry from one of our Distributors for approximately 1000 complete 1000 watt Floodlight fittings for shipment to Venezuela, South America, being part of a large contract. The materials for and execution of same must be placed in this country. The business will be naturally strictly competitive, (we are up against G.E.C.) but we are anxious to quote, and with your permission, would do so.

The glass reflectors necessary will form a relatively small

part of the cost of the complete fitting which consists mainly of the metal housing, etc., which we would have to have manufactured for us.

The approximate sales value we estimate would be in the neighbourhood of £20,000. Assuming we have your permission to quote, in view of the competitive nature of the job, we would in this case suggest reserving you a commission of 5% on the net sales value.

The matter is urgent, as we have to put our tender in very soon, and as there will be quite a bit of work for us to do in getting the prices together of the various components, we shall be glad if you will kindly in this instance cable us if we should endeavour or not to secure the business and if so what commission we shall reserve for you. [fol. 456] Thanking you for your prompt and kind response.

Yours truly, Holophane Limited, Chas. H. Bansback,
Director and Secretary.

[fol. 457] GOVERNMENT'S EXHIBIT 68

Air Mail

March 5, 1948.

Mr. H. Bansback,
Holophane Limited,
Elverton Street, Vincent Square
London S. W. 1, England.

Dear Mr. Bansback:

Yours of February 27 arrived while I was in New York City, and I wired you as follows:

> Bansback February twenty seventh will not decide until all details on inquiry regarding ultimate user and proposed unit received. Assuming we agree on some commission how could it be transferred here?

We received your answer as follows:

> Flood light enquiry for Shell Petroleum Venezuela would quote our catalogue numbers CFL1000 NB1000

we believe bank would permit transfer commission on this project stop important we have immediate decision delay prejudicing our opportunity.

Then we wired again as follows:

Agree quoting Venezuelan flood light inquiry without precedent. Reserving minimum seven and a half percent commission to us.

To be perfectly frank, we are not very keen on complying with your request because we feel that even at the risk of losing some business, we should keep the American Continent market for Holophane absolutely to ourselves. On the other hand, we realize that we have not yet begun to do much actual work in the South American Republics although recently, we have had quite some contacts indirectly with Venezuelan business. Further, we believe that either the Badger Company of Boston or the Lummis Engi- [fol. 458] neering Corp. in New York City act as consultants and/or purchasing agents for these Venezuelan Shell Company prospects and we are very close to both companies. Maybe we overlooked a good thing by not trying to have them specify more often Holophane for export countries as compared with what they do in our favor in the U. S. A. By the way, through one of these channels, I think the Badger Company, it came to our knowledge, that during the war some business on Holophane products, maybe flood lights or flame proof units were taken by you, without advice to us, for shipment to South America. We must ask you very definitely to be very sure that such things do not reoccur.

In this particular case, we felt in sympathy with your own thoughts that since the time was short, if we did not allow you to quote on the flood lights, which we do not make here, that you might lose a nice piece of business for export, which means so much to Great Britain right now, but we did not like you to tell us or intimate we should be satisfied with a 5% commission. Rather, you should have given us your estimated cost plus 30% as per contract, tell us at what price you expected to quote, and then we could have seen how much profit below the official 30% agreed

between us per contract, we would be satisfied with. In fact, we feel rather badly about your having written us a letter as you did, instead of giving us details to which we are fully entitled, and which we must ask, if you want us to reply to any mail of this kind on all future prospects that you receive from our territory.

Please do not forget we paid a very high amount of money for the territory and we surely can expect you to treat us not just as someone who is allowed to participate in business profits but someone who, so to speak, is the principal. It should not have been necessary, in our opinion, to send you the first cable. All this information should have been in your original letter and we request once more that any inquiry that comes to you from our territory is relayed to us in full details and ask you to give us official assurance on this.

Another question brought up, was surely not answered satisfactorily in your cable when you say, "Believe that the bank would permit transfer of commission." That is indeed very vague, but again in view of the friendly relations over so many years past, we did not want to be arbitrary. However, by writing this lengthy letter, we want to make sure you understand how we feel about this in order to avoid any reoccurrence.

Yours very truly, Holophane Company, Inc., ——
——, Chairman.

Chas. Franck: MAC.
cc DT EP CCK GC.

[fol. 459] GOVERNMENT'S EXHIBIT 69

JOEL B. LIBERMAN
Attorney at Law
Canadian Pacific Building
342 Madison Avenue
New York 17, N. Y.

Phone: Murray Hill 2-0398

January 9, 1948.

Charles Franck, Esq.,
900 N. E. 100th Street,
Miami 38, Florida.

Dear Charlie:

Mr. Exelman's letter of November 24th was given to me for translation and as I know you would like my views on this I would say that my thoughts on the subject are as follows:

Apparently a Mr. Cremer in France was working on an improvement of Projectors for Lighting Cinema Studios and was on the point of or did apply for a patent application in France and had the intention of taking the invention in his own name.

At some point Mr. Exelmans stepped in and arranged with Mr. Pages (of the French Holophane company) and Mr. Cremer to take out the patent in Mr. Pages' name, but there was an understanding between Messrs. Cremer and Exelmans (because of the history described in the letter) that Mr. Cremer was to be given some rights in the subject.

The problem in Great Britain was solved by giving Mr. Cremer a non-exclusive license and he was to pay a royalty of 10% to the British Company. These arrangements between the British company and the French company are more easily handled than between the American company and the British company because the French company to a certain extent is a supplier of the British company. I do not know exactly how you wish this matter handled but have these two thoughts:

(a) You can refuse to grant any permission for importation of an article of the character described in which the French company has any interest.

(b) If you want to give some concession in view of the history you might say that you will allow Mr. Cremer 10%, which is the reverse of what the French company is doing in the English case; in other words, there could be no impor-ation from France.

[fol. 460] Under any circumstances, be sure that any importation for sale in this country by Mr. Cremer or by anyone else but yourself should be called by some other name than Holophane because only articles manufactured or sold by you should be called Holophane.

Mr. Cole tells me that he has not seen any application referred to in the letter and I am giving him a copy of the translation of Mr. Exelman's letter and the within letter so that he can be on the look-out for it; also I am giving a copy of all this material to Mr. Rolph as the original letter was addressed to him.

The inventions of this type (cinema projectors) sent to us from time to time by the French company have never been interesting to us and the matter per se would be of trifling importance except for the principle involved.

With kind regards, believe me,

Sincerely yours, Joel B. Liberman.

JBL:ALR.

[fol. 461] GOVERNMENT'S EXHIBIT 70

Jan. 21, 1948.

Mr. Rolph.

Holophane Paris

Cremer-Pages Patent

Mr. Liberman wrote me on January 9th sending copy of letter from Exelman dated November 24th on the above subject, explaining why they took the patent in reply to your letter of October 2nd to Pages.

I remember at that time you told me that, in your opinion, Holophane U.S.A. was not interested in this special im-

provement of projectors for lighting cinema studios. If you maintain this position, after perhaps discussing it once more with Harry Logan, then I feel that the simplest way for us would be to advise Exelman that we do not wish to make any arrangements with Pages on this patent, which of course if sold in the U. S. at any time could not be sold under the trade mark Holophane. In fact, I think in line with Mr. Liberman's suggestion we could refuse to grant any permission for importation of an article of the character described in which the French Holophane Company has any interest.

Our past experience has shown that several inventions of this cinema projector type made by the French Company never interested us, but I do not want to close the door until you have had another opportunity to look into it and perhaps get Logan's advice also.

Let me hear at an early date, please.

—— ——.

CF:V.
cc JBL.

[fol. 462] GOVERNMENT'S EXHIBIT 71

Holophane—Societe Anonyme Au Capital de 8,250,000 Francs

(Holophane Incorporated Company with Capital of 8,250,000 francs)

Holophane—PBL (Benelux Countries?)

(letter stamped "Received", Sept. 7, 1948)

Scientific Glassmaking and Optical Illumination
156 Boul. Haussman, Paris 8

Telephones: Carnot 11-70 to 11-74
Telegraph: Holophane Paris, R. C. Seine 31-326

Via Airmail

Our Ref: LT JT No. 7931 File: 1585

Paris, September First, 1948.

Holophane Glass,
342 Madison Avenue,
New York, United States.

Gentlemen:

You will receive directly from our Belgian Company, order for

100 *Plates 11.F.12

We agree to having our agent negotiate directly with you, regarding the purchase of these glassware, without your having to put aside any commission for us in this matter.

We would be grateful to you to give him satisfaction as soon as possible.

We beg, Gentlemen, to remain

Very truly yours, (illegible signature), (illegible signature), President and General Manager.

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* This word is questioned; it may refer to sockets.

[fol. 463] GOVERNMENT'S EXHIBIT 72

Airmail

September 1, 1948.

La Societe Anonyme,
Francaise Holophane,
156, Boul. Haussmann,
Paris (VIIIe), France.

Gentlemen:

We received an order dated August 24 from the Belgian Holophane Company signed by Mr. Bouvet, calling for 100 Controlens Holophane 11-F-12 Intensive, to be shipped by airplane to the Brussels address. It is stated thereon that the French Holophane Company is in accord with this. I believe such orders should come from you as we do not wish to open an account for the Belgian Company but rather prefer to have this all in one account with your company. There might be technical reasons why this is not feasible but not knowing anything about the status of the Belgian Company nor their proposed way of payments, which would have to be in U.S.A. dollars, we cannot deal with this order until we hear further from you.

As far as we can find out for the moment, shipment by airplane via American Overseas Airlines could be accomplished costing 87¢ per pound. The estimated weight of these 100 lenses packed is 440 pounds, or a total of $383.00 for air transport from New York City plus, of course, air or express transport from Newark, Ohio, to New York. We should also know if there is any special classification under which this merchandise should be declared to come into Belgium.

Please do not misunderstand the above, thinking that we do not wish to cooperate. Rather to the contrary, because we were the ones who told Daybrite of St. Louis whose Belgian agent wants these lenses that they must buy from Holophane Paris and not from us for export, and then for old times' sake, naturally, the writer likes

to help along, but it must be done in the regular way, and not suddenly in a form as submitted by Mr. Bouvet.

Very truly yours, Holophane Company, Inc., ——
——, President.

Chas. Franck/DL.
cc/via Boatmail.

[fol. 464] GOVERNMENT'S EXHIBIT 73

Holophane—Societe Anonyme Au Capital De 8,250,000 Francs

(Holophane, Incorporated Company with Capital of 8,250,000 Francs)

Holophane—PBL (Benelux countries?)
Scientific Glassmaking and Optical Illumination
156 Boul. Haussmann, Paris 8
Telephone: Carnot 11.70 to 11.74

Telegraph: Holophane Paris, R. C. Seine 31,326
Our Ref. LT. GD 8514 File 1585

Paris, September 15, 1948.

Holophane Glass,
342 Madison Avenue,
New York, U.S.

Gentlemen:

Furnishing of *Plates II.F.12 for Belgium.

We indeed received your letter of the first instant concerning the order for

100 *Plates II.F.12

which was sent you directly by our Belgian Company.

We take the liberty of insisting again that you negotiate this matter directly with our Belgian Company. This method of procedure appears to us to be much more economical:

—avoiding on one hand the costs of reshipping from Paris to Brussels

—on the other hand eliminating all the trouble we might actually have with the Office Des Changes in regard to the reshipment abroad of American imported merchandise.

However, it is naturally understood, that the Belgian Holophane Company would pay you in dollars which it is able to rapidly obtain. It could pay you upon the receipt of the invoice. We vouch for this settlement.

[fol. 465] The shipment of these *plates should be made as rapidly as possible by boat and not by plane, as it had originally been planned.

We believe that you will indeed adopt our way of thinking, and we hope that you can soon send to the Belgian Company all information (price, package wrapping, net weight and gross weight), in order to allow them to immediately start their proceedings with view to obtaining import licenses.

Naturally no commission must be reserved at Holophane Paris.

We beg, Gentlemen, to remain

Very truly yours, (illegible signature), Commercial Manager, (illegible signature), Secretary-General.

[fol. 466] GOVERNMENT'S EXHIBIT 74

September 29, 1948.

Dear Charlie:

Glad to hear from last night's phone that you and Vera are progressing all right.

I called at your office and talked with Dorin and she read me your letter about Holophane, Paris. As to the first part, I assume that this was just information to me and there's nothing that I should do about it; but as to the second part, viz., a separate contract with the Belgian company which has come into existence, I agree that this should be made and I will read the French contract over

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*Translator's note: This word is questioned; it may refer to socket.

and prepare a similar one for the Belgian company, and then write a draft letter for you to send to the French company with the proposed Belgian contract.

With kind regards and best wishes for a speedy recovery.

Joel.

JBL/DL.

[fol. 467] GOVERNMENT'S EXHIBIT 75

Mr. J. B. Liberman.

Societe S. A. Belge, Holophane Et PBL

September 30, 1948 (dict. 9/28).

Dear Joel:

The above is an independent company according to statement made by Holophane, Paris. They asked us to ship some of our lenses, 11-F-12, to them for an order that one of our American Controlens distributors has. In this case, the Day-Brite Company of St. Louis. Paris thinks we should deal with them directly.

I have no objection but with the advent of this company having become independent in set-up, although probably all of its shares being owned by Holophane, Paris, it seems to me that we should protect ourselves by having a trading agreement with the Belgian company the same as we have with the French company, or modified in accordance with present time conditions.

May I have your advice?

CF:DL.

[fol. 468] GOVERNMENT'S EXHIBIT 76

Holophane—Societe Anonyme Au Capital De 8,250,000 France

(Holophane Incorporated Company With Capital of 8,250,000 Francs)

Holophane—PBL (Benelux Countries?)
Scientific Glassmaking and Optical Illumination
156 Boul. Haussmann, Paris 8
Telephone: Carnot 11-70 to 11-74
Telegrams: Holophane Paris

Our Reference: LT. DG 1421 File 2536

Paris, February 11, 1949.

Mr. Franck,
Holophane Company, Inc.
342 Madison Avenue,
New York, U.S.A.

Sir:

Our Brussells Agent, Mr. Bouvet, has many times complained that the Holophane glassware made by you has been introduced into Belgium contrary to our agreements. We cite to you in particular, the case of the Day-Brite Company who is receiving directly from America some 11 F 12 plates* for fluorescent tubes. (We remind you, however, that we are, at present time, preparing the mold of these plates* and that we ourselves will very shortly manufacture them).

We give you, here below, an extract from the letter which Mr. Bouvet sends to us:

> "We thus remind you, that during last August we were visited by Mr. Rey, Manager of the Belgian Day-Brite Company, who had previously received hundreds of Holophane plates* 11 F 12 from his American firm; however the latter wrote him that the exporting of Holophane glassware being forbidden it was not

* Translator's note: This word is questioned; it may refer to socket.

possible any longer to send him the 50 plates* destined to replace those broken in transport, and that it was necessary for him to write to us. Accordingly it is not difficult to believe that the quantities received were indeed large to amount to such breakage!

[fol. 469] "According to your instructions, we ordered, on 8/24/, 100 plates* 11 F 12 at the Holophane Glass Company, in order to create a small stock and furnish the Belgian Day-Brite Company while waiting until you yourself could furnish us that model whose mold was being made at your factory. Mr. Franck has not replied to us, but first wrote to you that he would prefer to send them to your address. As you told him that this would cause double transport and customs charges, he wrote you, only on October 12th, that he suddenly no longer had stock in this number and advised you to allow the Day-Brite American Company to furnish its Belgian agent. Undoubtedly not agreeing to permit such a traffic to continue, you gave us order, through your letter 9778 of October 21st, to address ourselves in regard to this matter, directly to the Day-Brite Company; this we did by addressing order to it on November 10th, however this Company has never replied to us in spite of our confirmation of December 13, 1948. We have advised the Belgian Day-Brite Company of this, and we have learned that its American firm has, purely and simply, sent it 50 new plates* thus dispensing with your permission and with ours."

"Consequently the Belgian Day-Brite Company has cancelled its order for 50 plates* which it had placed with us."

We request you to tell us what you intend to do, in order that such an act does not repeat itself in the future.

We thank you in advance and beg, Gentlemen, to remain

Very truly yours, (illegible signature), Commercial Manager, (illegible signature), President and General Manager.

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* Translator's note: This word is questioned; it may refer to sockets.

[fol. 470] GOVERNMENT'S EXHIBIT 77

Air Mail

October 12, 1948 (Dict. 10/11).

La Societe Anonyme,
Francaise Holophane,
156, Boul. Haussmann,
Paris (VIIIe), France.
Subject: *LT. GD 8514, Dossier 1585.*

Gentlemen:

The replying to yours of the 15th has been delayed, unfortunately, due to the writer's absence and to an automobile accident that kept him in bed for some time. However, in practice, that makes very little difference because we are about eight to ten weeks behind on delivery from our factory of No. 11F12's for domestic business alone.

It is a matter of principle that we should not recognize direct dealings with the Holophane Belgian Company in general until we have come to an inter-Company agreement, similar to the one that we have with you in France. We understand thoroughly, however, the reasons why you would like to keep out of this transaction and would prefer to have the Belgian Holophane Company deal with us directly and we will not put any undue difficulties into your way while this proposed agreement with the Belgian Company is under consideration but, for the moment, in view of our being so far behind in orders and the urgency of shipment required by the French Company, as indicated by their first demand of shipment by Airplane (which later on you, however, change to boat shipment), we think it would be better all around if, either directly or, better, through us the Belgian Company would authorize the Daybrite Company in St. Louis, Mo., U.S.A. that they would furnish from their stock either with or without their fixtures, in this instance, to their agent in Brussels, at least 50 of these lenses, No. 11F12.

If that is not satisfactory to them, then they must get for us the official import permit into Belgium as that is required by the Belgium authorities and there is no other information that we can think of you would need than what

was contained in our letter of September 1st to you, in the way of weight and approximate cost.

The suggestion of allowing this case to be treated as an exception by Daybrite's direct shipment to Belgium is only made for the purpose of hurrying this one transaction along but should not be considered either by Daybrite, Belgium or ourselves as a precedent.

[fol. 471] Once we have come to a general agreement with the independent Belgian Company, they can buy from us just as you or Holophane, Limited for import into their country under the conditions stipulated in the agreement to be made.

Very truly yours, Holophane Company, Inc., ——
——, President.

CFranck:ap.
cc: via Boatmail.

[fol. 472] GOVERNMENT'S EXHIBIT 78

February 19, 1949.

Monsieur Exelmans,
Holophane,
156, Boul. Haussmann,
Paris (VIIIe), France.

Monsieur,

Your letter of February 11th has just come to hand. I must admit that I do not care very much for the insinuations as contained in Mr. Bouvet's letter and apparently accepted by you that we have indirectly or directly encouraged the Daybrite Company of St. Louis to ship Holophane Controlenses 11F12 or any other type to countries which are outside of our regular territory such as Belgium. That is not the way we do business and I would like to have this clearly understood once and for all. We might have disagreements, Mr. Exelmans, like anyone can have and we will try to thrash them out in open and frank manner, but we do not "beat around the bush" as the saying goes here, and try to put something over on the other fellow.

When Mr. Bouvet says in his letter, of which you give me extract, that in my letter of October 12th to you, I *suddenly* stated that we had no stock, he either does not understand the English language or was not properly advised by the French company. Just read over my letter. It clearly says only *one* thing in reference to shipment and that is that we are far behind in our orders. At that time I believe our delivery was 16 weeks on this type of Controlens of which, for your general information, we shipped far over 100,000 pieces during 1948.

I have no specific correspondence available, writing from Florida, but I am positive that not only in the case of Daybrite but also other American customers, we advise them, whenever we have the slightest suspicion about destination to outside countries not under our jurisdiction, they must get in touch with the respective foreign Holophane Company. That we will continue to do.

It is regrettable indeed that the Daybrite Company in this particular case took it upon themselves to ship to their agent these 50 lenses, and you ask what we will do to avoid recurrence of such incidence. We cannot do anything other than what we have done in the past and when I say "cannot" I mean that we legally cannot.

[fol. 473] If these customers do not wish to carry out our request to contact the foreign Holophane company, there is nothing in our power to prevent them from doing what they please with merchandise they buy and pay for, but of course they run the risk that they might get into difficulties in the country to which they improperly export.

If you have any other suggestions to make that would legally be permissible in this country, we will be very glad to have them.

I also want to remind you at this opportunity that since you advised us in one case the Belgium company was an "agent" and that in another case it was a "separate setup," we are not prepared to do any business with the Belgium company until we know who they are, and until we have made a trading agreement with them as proposed in my letter of October 12th.

It strikes us funny that Mr. Bouvet should come back on this whole matter in the way he did when we review

the correspondence and find that originally he made the ridiculous request to ship 100 lenses by air at the cost of $383 for transportation, see copy of my letter of September 1st enclosed.

Also you might remind Mr. Bouvet that we suggested in that same letter of October 12th to obtain from him special importation permits for Belgium required in case they did not like to handle the matter as I then had suggested, allowing as an exceptional case the Daybrite Company to ship these 50 lenses from their own stock.

In the light of your letter of January 10th dealing primarily with the subject of Line Material Company, I am entirely in accord with the sentiments expressed therein and reciprocate same.

Yours very truly, Holophane Company, Inc., ——, President.

ChasFranck:V.
Enc.

[fol. 474] GOVERNMENT'S EXHIBIT 79

Holophane—Societe Anonyme au Capital de 8,250,000 Francs

(Holophane—Incorporated Company with Capital of 8,250,000 Francs)

Holophane—PBL (Benelux Countries?)
Scientific Glassmaking and Optical Illumination
156 Boul. Haussmann, Paris 8
Telephone: Carnot 11-70 to 11-74
Telegrams: Holophane Paris, R. C. Seine 31.326

Paris, February 24, 1949.

Our Ref. ME. GD 1978

Mr. Franck—Holophane Company,
342 Madison Avenue, New York, U. S. A.

Dear Mr. Franck:

I have no desire to see the relations between our two Companies take the aspect of a cold war, and if I sent you

the letter from Mr. Bouvet it was solely to show you an example of the present state of affairs of the Holophane business in the countries where we are working.

We often receive letters of this type, and we could like to find, in complete agreement with you, a means to better the situation. I very well understand that it is difficult for you to handle, as children, such clients as Day-Brite and especially General Electric, however, I ask you to put yourself for a moment in my place and think a little as to what you would say if the different countries of South America were invaded by Holophane apparatus made in France.

The importing of your glassware into Belgium is not, however, an isolated case: one of our agents who has returned from Portugal advises us that the GECO has furnished, and continues to furnish within that country, apparatus series 79, equipped with Holophane cups* of American manufacture. Our contract however, indeed specifies that each Holophane Company must take all measures to prevent exporting into territories granted to another Company. In complying with this towards us, you would treat us justly, for we ourselves always continue [fol. 475] to abide by this obligation of our contract in spite of the very numerous requests we have received (particularly from South America).

We again ask you what you intend to do, to avoid all these incidents in the future, or at least in regard to compensating us.

We would like to hear from you in an early mail and we thank you in advance. I beg you dear Mr. Franck to believe me.

Sincerely yours, —— ——, (illegible signature) 79'
President, General Manager.

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*Translator's note: This word is questioned; it may be canopies or sections.

[fol. 476] GOVERNMENT'S EXHIBIT 80

Holophane—Societe Anonyme au Capital de 8,250,000 Francs

(Holophane—Incorporated Company with Capital of 8,250,000 Francs)

Holophane—PBL (Benelux Countries?)
Scientific Glassmaking and Optical Illumination
156 Boul. Haussmann, Paris 8
Telephone: Carnot 11-70 to 11-74
Telegrams: Holophane Paris, R. C. Seine 31, 326

Paris, March 15, 1949.

Our Ref.: LT. GD 2778; File 2536

Mr. Franck—Holophane, Inc.,
342 Madison Avenue,
New York, U. S. A.

Sir:

Mr. Exelmans, absent at present time from Paris, requests us to remind you of his letter 1978 of February 24th ultimo concerning the sales of Holophane apparatus in the zones which are reserved for us, specifically Belgium and Portugal.

In regard to the latter region, we are able to give you the following exact information: the Compagnie du Gaz de Lisbonne (Lisbon Gas Company) has just ordered at the GECO,

49 fixtures 79 R at a discount, $1,380.00
40 fixtures 79 D at a discount, $1,340.00

which must be delivered within three months. On the other hand we know that the GECO has sold more than 44 fixtures 79 DR at a discount $1,320.00 and that it plans to offer a new type of fixture, better bargain—its price would be around $750.00.

We believe that the moment has come to stop these infringements within our zone of sale, and we take the liberty of again insisting upon knowing what you intend to do to avoid these incidents in the future.

Awaiting to hear from you on this matter, we beg Sir to remain

Very truly yours, —— —— (illegible signature), The Secretary General; —— ——, (illegible signature), The Commercial Manager.

[fol. 477] EXHIBIT 81

March 28, 1949.

Holophane,
156 Boul. Haussmann,
Paris (VIIIe), France.

Gentlemen:

Yours of March 15th, there did not seem to be much use to continue correspondence and therefore reply to your letter of February 24th as long as you quite clearly indicated that information previously given by me was not taken at its face value, and since erroneous statements by your Belgian agent, as already pointed out by me, apparently did not interest you to rectify them. My letter of February 19th in my opinion was entirely clear if it was read with the intent of not disagreeing. I said therein, "We cannot do anything other than what we have done in the past and when I say 'cannot' I mean that we legally cannot." That is the case and I am not desirous at this moment to explain it any further. You will have to take my word for it.

I had a long-distance telephone conversation with my office today and after thorough investigation they find just as I expected that we have not received during 1948 or 1949 any orders from the I.G.E. for shipment to Portugal or for that matter any territory belonging to the French company. The only order that came up for shipment into your territory I was told was in 1947 when we negotiated with you in the regular way according to our general agreement and after that was settled later on gave you the credit to which you were entitled.

I explained to you earlier that we cannot control the des-

tination of merchandise ordered from us unless our customers indicate that it is for export. Every one of our big customers that work with us under contract has accepted a written obligation not to export Holophane under such contract. Here are two possibilities that just come to my mind:

> First, probably the most common, thinking of No. 79 G. E. Refractor, they order this refractor, our No. 4120 for stock shipment to their factory in Massachusetts in lots of 5,000 or 10,000 at a time. Then they may receive an order, or the I.G.E. may receive it, for a few as apparently in the case of Portugal you mention, and we would never know they were shipped by them.
> [fol. 478] The second possibility is that some New York exporter might get such an order from Portugal, place it with the G.E. or I.G.E., not even mentioning the country and so they go out entirely without our knowledge.

The only way we see to get protection is that the Holophane Company institute legal procedure for misuse of the trade mark in the country where such export shipments have been landed without that Holophane Company's consent.

Now as to your specific case of the Company du Gaz de Lisbonne, the information you give is of no practical value to make any further investigations although they probably wouldn't lead us anywhere. We would have to know when it was ordered, by whom, to whom, and all details. How otherwise could we get ahead with a company that does pretty close to two billion dollars worth of business and employs, to be exact, 196,798 employees, such as the G.E.!

Further, the 79-R you mention is a complete fixture, of which the Holophane Refractor 4110 is only a part. Therefore the amounts mentioned by you are misleading. What does the following mean: "Esc. I.380$00"?

Then further the 79-D mentioned is the deflecting construction with a glass globe of the same contour but *not* a prismatic Holophane refractor.

We like to do and have done in the past everything rea-

sonable and only a few weeks ago I -ssued again instructions for our own organization in the U.S.A. how to carefully handle export orders so that our sister companies in England and France would not be injured, but you must not expect the impossible and you must first of all have confidence that we mean what we say.

Yours very truly, Holophane Company, Inc., ——
——, President.

ChasFranck:V.

[fol. 479] GOVERNMENT'S EXHIBIT 82

Translated from French

Holophane—Societe Anonyme au Capital de 36,300,000 Francs

(Holophane, Incorporated Company with Capital of 36,300,000 Francs)

Holophane—PBL (Benelux Countries?)
Scientific Glassmaking and Optical Illumination
156 Boulevard Haussman, Paris 8
Telephones: Carnot 11-70 to 11-74
Telegrams: Holophane Paris, R. C. Seine 31,326

Paris, August 6, 1948.

Our Reference LT. GD 7340 File 2536

Holophane Glass,
342 Madison Avenue,
New York, U.S.A.

Gentlemen:

We have been consulted by the Line Material Company, Milwaukee, Wisconsin, in regard to the eventual sale of their "Luminaire Sperolite" fixtures in the Benelux countries.

You will find attached duplicate copy of our reply.

In case that Company undertakes arranging an agreement on these grounds, we think that you, in agreement with the Line Material Company, will see no objection

to sending us the sketch of the cup* as well as the diagram of the prisms' angles.

However we will keep you advised regarding this question.

[fol. 480] We beg, Gentlemen, to remain

Very truly yours, —— —— (illegible signature), Commercial Manager; —— —— (illegible signature), President and General Manager.

(Stamp) Received Holophane Company, Inc., August 20, 1948, New York, N. Y., Rec'd & Dist. B.

[fol. 481] GOVERNMENT'S EXHIBIT 83

Airmail

August 30, 1948, dict. 8/26.

La Societe Anonyme,
Francaise Holophane,
156, Boul. Haussmann,
Paris (VIIIe), France.

Subject: Line Material Company—Milwaukee, Wis. Spherolite Luminaire.

Gentlemen:

We received your letter of August 6 advising that you are now in direct contact with our good customers, the Line Material Company of Milwaukee, Wisconsin, for deliveries into the Benelux countries.

It might interest you to know that we had some rather sharp correspondence when they originally asked for our quoting them. We refused to do so and they came back and told us in strong terms that it looked as if we didn't want to play ball with them. The writer came back personally in a letter and said that we just had an agreement of long standing with you and nobody could make us break our agreements etc.

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* Translator's note: This word is questioned; it may be canopies or sections.

Now as far as your proposed contract is concerned, we appreciate your having sent your letter to us and request that on all future correspondence that you may have with the American concern that you continue keeping us posted by copy so that no correspondence is carried on with the U.S.A. without our full knowledge. We are sure that that was anyhow your intention.

When the time comes we will be glad to supply you with mold design and prism angle table as available at our factory.

Very truly yours, Holophane Company, Inc., ——
——, President.

Chas. Franck/DL.
cc/KF SRW.

[fol. 482] GOVERNMENT'S EXHIBIT 84

Line Material Company

September 17, 1948.

Mr. Charles Franck, Pres.,
Holophane Company, Inc.,
342 Madison Avenue,
New York 17, N. Y.
Subject: Export of L-M Street Lighting Luminaires to the Benelux Countries.

Dear Mr. Franck:

When we received Mr. Keller's letter of June 24th, suggesting that we contact the Holophane Company in Paris, France we did so and have carried on correspondence with the Paris organization, in order to find a way of supplying our street lighting equipment with Holophane refractors to these three European countries—Belgium, The Netherlands and Luxemburg.

After sending complete details of the Holophane refractors involved and our own luminaires to Paris, Holophane-Paris have made us a proposition with which I want to acquaint you, because as you, I believe, will appreciate, it would be impossible for us to do business on this basis.

As I mentioned to your organization in my previous letters, we are absolutely uncertain as to the amount of business we can expect to do. Furthermore, there are three different Line Material luminaires involved and possibly seven different Holophane refractor designs.

Holophane-Paris made us a proposition that they would prepare the necessary tools and patterns and would bill us for these after they had analyzed their production cost.

For Belgium and Luxemburg, Holophane-Paris would furnish the refractors made to our specifications, directly to our sales agent in these two countries "at terms to be arranged." It is not clear whether Holophane-Paris would invoice our agents in French francs, and if how we could expect to make a profit on these refractors, to which profit we feel we are entitled.

Holophane-Paris has a branch organization in Belgium, which apparently is in charge of Belgium and Luxemburg. We, here, are expected to pay this Belgian subsidiary of Holophane-Paris a 5% sales commission on all Line [fol. 483] Material refractors made by Holophane-Paris and sold in Belgium and Luxemburg. Aside from the proposition itself, we are immediately wondering whether on top of everything, we are supposed to pay the Belgian subsidiary of Holophane-Paris in dollars, although apparently no dollars are involved in the actual selling price.

The above is the proposition given us for Belgium and Luxemburg.

Holland comes under the jurisdiction of Holophane, Ltd., in London, and it is proposed to us that we deal directly with London, although Holophane-Paris would be glad to assist us in getting lined up. The intent is that Holophane-Paris would again manufacture the refractors to our designs, but would invoice Holophane, Ltd., in London. Holophane-London would in turn invoice us for the refractors manufactured by Holophane-Paris. The refractors would be shipped directly from Paris to our sales agent in Holland.

Holophane-Paris also express the belief that we would be expected to pay the Holophane-London agent in Holland a 5% sales commission on Line Material refractors sold in Holland, similar to their demand for Belgium and Luxemburg.

If you have followed me so far, you appreciate that aside from anything else, the proposed way of getting refractors for our luminaires and of doing business in the three countries, is very complicated to say the least.

Furthermore, we would have to ship our luminaires from East Stroudsburg or South Milwaukee via New York to our agents in these three countries, and separately, independently, and possibly not at the same time they would receive refractors made in Paris.

In view of the uncertainty of the political and economic situation in Europe, we would be very reluctant to invest again in patterns, molds, etc., in Paris, even if they should be lower in cost than your own figures in New York. As there are a maximum of seven refractors involved, if we only assume a tooling up cost of $1,000.00 apiece, we would have to invest $7,000.00 on taking a chance to sell an unknown quantity in a very uncertain market.

We also feel that the proposition of our paying a Holophane agent a 5% sales commission is ill taken.

In talking with our domestic organization, I find that back in 1944 Mr. Cameron offered us the assistance of your organization. Not arriving at an acceptable proposition at that time, for reason of the war, we did [fol. 484] not follow through any further on this matter. Your organization in France was, of course, completely out of the picture at that time.

We wonder whether it could not be arranged that through your good offices, you could in some way succeed in furnishing us with refractors made by you. Even if we would have to place the order for these refractors officially with London or Paris, and London or Paris in turn placed the order with and on you so that we could furnish our luminaires complete with refractors from here, and pay *you* for these "export" refractors.

Inasmuch as the proposition offered us by Holophane-Paris is so completely unacceptable, we do not intend to correspond further with them until we have your comments and, we hope, your expression of assisting us in obtaining a more sensible, practical and business-like arrangement.

We would be very much interested to hear from you.

I also would like to refer to that part of your letter of July 13th, referring to the distributor contract made between your and our organizations. You state that under the terms of this contract we are only allowed to ship Holophane-New York refractors to the U.S.A. and its dependencies. I believe I am correct in saying that, although the contract was not amended, the Western hemisphere was included several years ago automatically and you have made arrangements with Holophane-London which would permit you and us to ship refractors made by you into the countries of the Western hemisphere. If I am correct in this statement, I think it would be desirable to amend our present contract to include this provision.

Yours very truly, Line Material Company, E. F. Hartert, Export Sales Manager.

EFH.
eeh.

cc: Swanson, Edman, Harsh, Hazelwood, Steinmayer, Ch. Brown.

[fol. 485] GOVERNMENT'S EXHIBIT 85

October 1, 1948 (dict. 9/30).

Mr. E. F. Hartert, Export Sales Mgr.,
Line Material Company, Export Division,
Milwaukee, Wisconsin.
Subject: Export of L-M Street Lighting Luminaires to the Benelux Countries.

Dear Mr. Hartert:

Your letter of September 17 addressed to me at New York was forwarded to me while at the I.E.S. Convention in Boston. I expected to attend to it promptly upon my return but for reasons explained in the enclosed copy of today's letter to Holophane-Paris, I had to delay dictating until now.

I think my letter to Paris is self-explanatory and, I hope,

in line with what you wanted me to do, and which I am very glad to do for the sake of my old friendship with your Mr. Kyle and our long standing pleasant business relations with your company.

As to the last paragraph, I would like to mention for good order's sake that *while we have now the rights to handle all western hemisphere transactions*, which means Central and South America, *we are not able to allow a blanket coverage of these Republics outside of the U.S.A. and Canada by you or other street lighting friends* because we might be interfered with, now or later, by special arrangements of exclusive selling. However, I can tell you that at the present moment any orders that you want to place with me on refractors for South America and Central America, with exception of the Republic of Mexico, will be accepted by us; it remaining definitely understood that this is the status for the moment subject to changes, however, if found necessary.

Very truly yours, Holophane Company, Inc., ——
——, President.

Chas. Franck/DL.
enc.

[fol. 486] GOVERNMENT'S EXHIBIT 86

Airmail

October 1, 1948 (dict. 9/30)

La Societe Anonyme,
Francaise Holophane,
156, Boul. Haussmann,
Paris (VIIIe), France.

Subject: Export of L-M Street Lighting Luminaires to the Benelux Countries.

Gentlemen:

I am dictating this letter from my home where I have been laid up for the last week as a result of an automobile accident while returning from the annual Illuminating Engineering Society's Convention in Boston and, there-

fore, I will have to deal with certain matters brought up earlier from memory, and you will have to excuse me if I may not be quite to the point on some of the features, as I was pretty badly shaken up, yet didn't want to delay writing you in view of letter received from our good friends, the Line Material Company, dated September 17 signed by their Export Manager, Mr. E. F. Hartert, as per the enclosure.

I remember that you sent me your proposal to the Line Material Company on how to handle this subject matter and my impression then was that it was much too complicated to be practical, at least in line with business ideas we have in this country, and that we could not expect for the sake of a relatively small inquiry, prospect, or order that Line Material had to handle at the moment in one or two of the Benelux countries, that the same Line Material Company should go to all the trouble of compensating you for making up tools amounting to, say possibly $7,000.00 to $10,000.00, when there exists a possibility for them to obtain the necessary exclusive Line Material refractors here in the United States from us.

The Line Material Company understands fully that we have inter-company arrangements and that the trademark situation in the different countries has to be respected and, therefore, any shipments to be made into the Benelux countries should have the official sanction of the overseas Holophane Companies, i.e., yourselves and also the Belgian Holophane Company, which we understand now is an entirely separate organization.

[fol. 487] However, once that approval of making certain shipments into the Benelux countries is obtained, we feel that you should consent to their placing at least the present orders with us, and we in turn are perfectly willing to waive any profits on the transaction for the sake of satisfying our friends and good customers, the Line Material Company, and credit you for the difference between our factory costs plus a percentage as per our general agreement between you and us dating back many years, and the price at which these refractors are invoiced to L-M in the U.S.A. On that basis, L-M would then be able to take care of shipping these refractors directly to the country of destination.

In how far that would settle future developments or

orders I'm not prepared to say at this moment. I don't think that you could very well afford, anymore than L-M or other street lighting friends of ours, to make up all the different exclusive molds which we have available here for L-M, General Electric, Westinghouse Electric, etc., as this would run into a very big amount of money; some of these molds having cost us as much as $6,000.00 apiece, but the majority costing around $2,000.00 to $3,000.00.

You will see from Mr. Hartert's letter how he feels about your proposal and, frankly, I must say that I can follow his arguments very well and that the way you had suggested is too complicated for doing business on a practical basis.

It is not my desire in the least to try even to interfere with your method of doing business. I am only telling you frankly what the reaction to such a proposition is here, and offering to help you and the Line-Material Company to obtain prompt action on the few requirements involved now. As I understand, there are about, for the first order, between 50 to 100 refractors involved, with the possible total requirements amounting to 1500. Maybe I am wrong in stating that this is a rather small matter because we are accustomed here to figure undoubtedly on much larger quantities than the Benelux countries can.

Please note particularly the first and second paragraphs on page 3 of Mr. Hartert's letter (marked with red pencil) where they ask to use us as intermediary, and at the same time advise that they are not desirous of having any further correspondence with you directly on the proposition made until they hear from us.

We are sending copy of this letter to Mr. Hartert so that he knows of our action and we hope that you will see the entire matter in the same light and accept our suggestion.

Very truly yours, Holophane Company, Inc., ——
——, President.

cc/Mr. Hartert.
SRW.
Boat Mail.
Chas. Franck/DL.
enc.

[fol. 488] GOVERNMENT'S EXHIBIT 87

Sea Mail

Please reply to: Brantwood Works, Tariff Road, Tottenham, London. N. 17.

Air Mail Copy Sea Mail

GC/LOM
Confidential

11th October, 1948.

Chas. Franck, Esq.,
The Holophane Co., Inc.,
342 Madison Avenue,
New York 17, N. Y., U.S.A.

Dear Charlie,

Export of L-M Street Lighting Luminaires to the Benelux Countries.

Your letter of the 4th October to hand.

In August last the French Company sent us a copy of their letter dated 9th August to the Line Material Co. To save time, I do not think I can do better than send you a copy of my departmental memorandum dated 18th August to Dr. English setting out how I view the matter and indicating that we would be prepared, as far as possible, to co-operate with the French Company in supplying the L-M Company with their requirements. You will note my covering remarks assume the manufacture in France of the glass in question, and we would be guided by the French Co's. arrangements and await to hear further from them. We advised the French Company accordingly but as L-M have not written to the French Co., nothing further has transpired.

As a preliminary, if the French Company are prepared to permit import into Belgium and Luxemburg on the lines of your suggestion, we would then be prepared to extend the same facilities in Holland, upon the terms of our inter-Company Agreement.

[fol 489] I was very sorry to read in your letter to M. Exelmans that you have been in an auto smash but glad to

gather you are not seriously hurt. I hope by this time you have completely recovered.

Yours sincerely, Guy Campbell.

c.c. M. Exelmans, Dr. English, Mr. Bansback, Mr. Souter, Mr. Briddon.

[fol. 490] GOVERNMENT'S EXHIBIT 88

October 27, 1948.

Line Material Company,
Milwaukee 1, Wisconsin.

Attention: Mr. E. F. Hartert, Export Sales Manager.
Re: Export of Line Material Street Lighting Luminaires to the Benelux Countries.

Dear Mr. Hartert:

I wrote you on October 1st enclosing copy of my letter written to Holophane Paris. Another copy of it went to *Holophane, Ltd., London.* I am now in receipt of letter from *Holophane Paris* as well as Holophane London, in which they both seem to agree to solution as suggested in my letter to them. *I told them that they should write to you directly* and upon receipt of their letter, no doubt you would want to tell us exactly which quantity and type of Holophane refractors you wish to export at present to the different countries involved in Benelux.

It remains understood, however, that in all future shipments we will have to consider each one on its merits and that *this exception* made now *cannot be considered as a permanent precedent.*

I hope that you feel something at least has been accomplished and will be glad to hear further from you.

Yours very truly, Holophane Company, Inc., ——
——, President.

ChasFranck:V.
Encs.
cc: London, Paris.

[fol. 491] GOVERNMENT'S EXHIBIT 89

November 20, 1948.

Mr. Keller:

Line Material Export to Benelux Countries

There has been lots of correspondence between Holophane London, Paris and myself since the first letter addressed by Line Material's Export Manager, Hartert, to you.

The final outcome is that Paris as well as London agree that Line Material could ship their present requirements from the U.S.A. directly; however, preferably not from their stock but should be on separate orders placed with us so that we can proceed with the accounting to London and Paris in line with our inter-company agreement.

Stu told us that for the first order there were about 50 to 100 refractors involved with the possible total requirements amounting to 1,500. We will charge to Holophane London or Paris respectively our cost plus 30%, plus an extra 10%, the latter on the sales price.

I wrote to Mr. Hartert on October 27th as per enclosed copy. Please be governed accordingly.

CF:V.
cc SRW GR.

[fol. 492] GOVERNMENT'S EXHIBIT 90

Line Material Company
Milwaukee, Wisconsin

December 15, 1948.

Air Mail

Holophane Limited,
Brantwood Works, Tariff Road,
Tottenham, London, N. 17, England.
Attention: Mr. Guy Campbell, Managing Director.

Gentlemen:

Re: Export of Line Material Street Lighting Luminaires to Benelux Countries—(GC/LOM).

We thank you for your letter of November 2 confirming your acceptance of the suggestion of Mr. Chas. Franck,

President of the Holophane Company at New York, on the handling of refractors required by us for shipment to the Benelux countries.

We are appreciative of your cooperation in this matter and hope that this business will develop to our mutual satisfaction.

Yours very truly, Lime Material Company, E. F. Hartert, Assistant Vice President.

EFH:bc.
cc: Mr. Chas. Franck, Pres., Holophane—New York.

[fol. 493] GOVERNMENT'S EXHIBIT 91

December 28, 1948.

Holophane,
156 Boulevard Haussmann,
Paris, France.

Gentlemen:

In further reference to your letter of November 5, we are in receipt now of letter from Line Material dated Decem-15 addressed to you in which they definitely object to paying you a 5% commission on the sales of their street lighting luminaires, including refractors. Maybe you did not mean what you said because it seems almost incredible to us that you should ask the Line Material Company to pay you a commission on their metal fixtures for street lighting purposes nor would we ever subscribe to such demand in their place. All that you can be interested in is the disposal of Holophane refractors and on that point either you are willing to let us ship Line Material requirements for the Benelux countries just as Holophane Limited London has agreed to shipment of refractors into Holland, and settle with you on the basis of our trade agreement, or forget about the whole thing.

We have explained to you that Line Material are good customers of ours and that we are anxious to help them but quite apart from that if they are set to get business in those countries for street lighting, they will get it. It may not be with refractors and in fact that is what their Mr.

Hartert tells me in recent letter received, again asking that I try to make you agree to the proposal contained in my letter of October 1st to you, or otherwise they will concentrate on selling their luminaires in Belgium without refractors.

In your last letter on the subject dated November 15 you said you would advise us of the reply from Mr. Bouvet which surely must have come to hand 'ere this.

Requesting an airmail reply,

Yours very truly, Holophane Company, Inc., ——
——, President.

ChasFranck:V.

[fol. 494] GOVERNMENT'S EXHIBIT 92

December 28, 1948.

Mr. E. F. Hartert,
Assistant Vice President,
Line Material Company,
Milwaukee 1, Wisconsin.

Dear Mr. Hartert:

Re: Export of Holophane Refractors to Latin America.

I admit I was rather surprised not to have heard any more from you but yours of December 15th just received makes clear the reasons for your delay. I hope you had a successful trip through South America. I wonder what you found out generally about street lighting, if that was part of your research. Thanks in advance for any such information.

To the best of my knowledge, we have not received any orders from you on refractors indicating that they are for export to Holland in line with the agreement reached with the Holophane Company of London. Please note that any such refractors should be shipped not from your stock but ordered separately in each case from us.

As to the French situation, I have written them another letter today and hope that this will bring about the expected results. I am almost inclined to think that when

they talked about the 5% commission they did not have in mind you should pay this on your own metal luminaires. As soon as I hear from them, will advise you further.

I shall write you about the Mexican situation very shortly.

Yours very truly, Holophane Company, Inc., ——, President.

ChasFranck:V.

[fol. 495] GOVERNMENT'S EXHIBIT 93

LINE MATERIAL COMPANY

January 3, 1949.

Mr. Chas. Franck, President,
Holophane Company, Inc.,
342 Madison Avenue,
New York 17, New York.

Dear Mr. Franck:

Many thanks for your letter of December 28 and, in particular, your renewed efforts to convince Paris that they should offer us the same proposition as Holophane, Ltd. of London.

I like to assure you that so far we have not sent any Holophane refractors to either Holland, Belgium or Luxemburg. As mentioned in my previous correspondence, until we have fully, satisfactorily cleared up the situation with Holophane in Paris, we wanted to refrain from endangering the situation. I understand, however, that if we make any shipments to these countries, a separate order should be placed on you.

I am looking forward to your later advice on the Mexican situation.

Yours very truly, E. F. Hartert (B.C.), Assistant Vice President.

EFH:bc.

[fol. 496] GOVERNMENT'S EXHIBIT 94

Paris, January 10, 1949.

LT GD 166 File 5280

Line Material Company,
Milwaukee 1, Visconsin.
Importation of Holophane Refractors into Benelux.

Gentlemen:

We, in due course, received your letter of December 15th replying to our previous correspondence concerning the importing into Benelux of reserved Holophane refractors which the Holophane Glass of New York manufactures for you.

We can but hold to the terms of our preceding correspondence, asking that, on the sale of apparatus imported into Belgium and Luxemburg, you pay a commission of 5% to our Belgian company: Holophane & P.B.L.*, 9 rue du Peuplier in Brussels.

Having again very carefully studied this question, it is apparent we cannot reopen the question.

We keenly regret that you are unable to accept the commission tax which to us, however, seems extremely low. Under these conditions we prefer to keep ourselves to the terms of our contract with Holophane Glass.

On the other hand we confirm to you that we will voluntarily make at our own cost one or two molds for manufacturing your most recent reserved models, thus allowing you to assure the necessary deliveries in our zone of exploitation.

We beg, Gentlemen, to remain

Very truly yours, (not signed)

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* Initials thought to stand for Pays Benelux or Benelux countries.

[fol. 497] GOVERNMENT'S EXHIBIT 95

LINE MATERIAL COMPANY

General Offices: Milwaukee 1, Wisconsin

Export Department: Cable Address, Linemater, Milwaukee

Codes: A. B. C. 5th Edition, Bentleys, "New Standard" Code, Universal Trade, Private

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January 24, 1949.

Mr. Chas. Franck,
President, Holophane Company, Inc.,
342 Madison Avenue,
New York 17, New York.

Dear Mr. Franck:

Re: Export of Line Material Street Lighting Luminaires into the Benelux Countries.

I believe you received directly your copy of the letter of January 10 from Holophane-Paris.

We are sorry to say that in spite of our renewed objections of December 15 and your own personal assistance, Holophane-Paris still insists that we should pay their Belgium organization a 5% commission on not only any refractors we might ship, but also on our own street lighting luminaires.

This, as I pointed out in my letter to Paris of December 15, is, in our opinion, a fully arbitrary, unfair and unacceptable proposition.

Apparently, Paris was not impressed by the arrangements that you so successfully initiated with Holophane Limited of England, which undoubtedly would have given them a higher profit margin than an outright 5 percent.

Holophane-Paris makes the offer now to manufacture at their cost and expense one or two molds in order to supply from France our most common types of refractors. Although this is a concession beyond their original proposition, we cannot immediately consider it as, quite naturally, we would have to know first what price we would

have to pay for the finished refractors. This, apart, from [fol. 498] our unchanged conviction that it is rather unsatisfactory to ship our luminaires from here and have glassware supplied from France for shipment to the ultimate customer. As we are at the present time, and known to you, in a state of flux in regard to new luminaires and new refractor designs, it would be impossible for us to decide what refractors would be most suitable for the Benelux market.

I have written to Paris as per the enclosed copy and it seems to us that for now we will have to bide our time until we have clarified with our agent in Bruxelles what type of L-M luminaires would be most suitable for the market and whether it would be necessary to supply refracting glassware.

Yours very truly, E. F. Hartert, Assistant Vice President.

EFH:bc
Enc.

[fol. 499] GOVERNMENT'S EXHIBIT 96

Semi-Annual Report of Holophane Company, Inc.

Fiscal Year Ending June 30, 1940

General Offices, 342 Madison Avenue, New York, N. Y.
Factory - Newark - Ohio

In Canada: Holophane Co. Ltd., 385 Yonge Street, Toronto
Holophane Company, Inc. (Incorporated in Delaware)

Condensed Statement of Income and Surplus,
Years Ended June 30, 1940 and June 30, 1939

	Year Ended June 30, 1940	Year Ended June 30, 1939
Profit from Operations.....	$244,306.67	$185,849.33

Plus Other Income Credits:		
Increase of investment in subsidiaries, interest from investments, etc.	37,352.68	29,771.33
Gross Income	281,659.35	215,620.66
Less Income Charges:		
Cash discount on sales, etc.	8,976.32	7,859.87
Net Income Before Federal Taxes on Income	272,683.03	207,760.79
Less Federal Taxes on Income	43,162.19	32,725.26
Net Income for Year	229,520.84	175,035.53
Less Surplus Charge:		
Premiums paid on preference shares purchased for retirement	49,866.87	19,323.28
Surplus for Year Before Dividends	179,653.97	155,712.25
Less Dividends Declared During Year:		
In 1940: preference dividends, $24,632.18; common dividends, $123,047.25; In 1939: preference dividends, $28,152.60; common dividends, $98,435.00	147,679.43	126,587.60
Net Surplus for Year	31,974.54	29,124.65
Plus Earned Surplus at Beginning of Year	353,426.25	324,301.60
Earned Surplus at End of Year	$385,400.79	$353,426.25
Earnings per share on common stock	$2.08	$1.49
Number of shares of common stock at end of year	98,442	98,444¼
Number of shares of preference stock at end of year	8,864	12,707

Certificate of Auditors

Holophane Company, Inc.:

We have examined the books of account and related financial records of Holophane Company, Inc. and have reviewed the system of internal control and the accounting procedures of the company for the year ended June 30, 1940.

The examination and review were undertaken for the purpose of enabling us to present to you statements which, in our judgment, would fairly set forth the results of operation of the company for the year and its financial position as at the end of the year. The work was carried out by methods and to the extent we deemed appropriate to accomplish this purpose with the exceptions noted in the next following paragraph. The examination did not, however, contemplate a detailed audit of the transactions.

The exceptions above referred to are as follows: (a) we did not confirm the accuracy of accounts receivable balances by communication with customers, and we did not make or cause to be made by our representatives any physical confirmation of inventory items; (b) we determined the results of operation of The Holophane Company, Limited, and its effect upon your investment in that company by an examination of the books of account and related financial records of that company made to the extent we deemed appropriate, with the exception that we did not confirm the accuracy of accounts receivable balances by communication with customers; and (c) we determined the results of operation in Verlys of America, Inc. and its effect upon your investment in that company by an examination of the books of account and related financial records of that company made to the extent we deemed appropriate, with the exception that we did not confirm the accuracy of accounts receivable balances by communication with customers, and we did not make or cause to be made by our representatives a physical confirmation of inventory reported to us as in the hands of consignees.

In our opinion, subject to the qualifications implicit in the exceptions noted in the preceding paragraph, the ac-

companying statement of income and surplus and the accompanying balance sheet fairly present the results of operation of the company for the year ended June 30, 1940 and the financial position of the company as at that date, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Eppler & Company.

New York, N. Y., August 2, 1940.

[fol. 500] September 3rd, 1940.

To Stockholders:

Submitted herewith is a Balance Sheet at June 30th, 1940 and Condensed Statement of Income and Surplus for the fiscal years ending June 30th, 1940 and 1939.

As to the Report

The net income for the year amounted to $229,520.84. After provision for taxes, depreciation and all other charges, earnings on the common stock were equivalent to $2.08 per share.

During the year your company's total tax amounted to $66,575.26, equivalent to $.68 per share of outstanding common stock.

At a Directors' Meeting held on July 30th, 1940 a dividend of twenty-five ($.25) cents was declared payable on September 3rd, 1940 to holders of common stock of record August 15th, 1940, and a semi-annual dividend of $1.05 payable on October 1st, 1940 to holders of preference stock of record September 14th, 1940. During the year, total dividends of $2.10 per share were paid on the preference stock and $1.25 per share on the common stock.

Increased value of the common stock is reflected by the following purchases by the company of preference stock for redemption over the years, greatly in excess of requirement.

1929-39	21,293 shares
1940	3,843 shares
Total	25,136 shares

Thus, of the original 34,000 preference shares there remain outstanding 8,864 shares; the redeemed shares were purchased by the company for $686,306.95 at an average cost of $27.30 per share.

As to Prospects

Progressive improvement is the keynote of survival in modern business. The company has installed new machinery, equipment and systems. New and interesting lighting units are being developed, some already on the market and others just released. These have been well received. Among these we have:

(1) Fluorescent prismatic lighting units.

(2) "Accent Light"—The store lighting unit that illuminates generally, and in addition throws a spotlight where wanted.

(3) Street Lighting "Reflector-Refractor" of a new type.

The "Verlys" line, conducted as a separate business, attracts more attention all the time. We have engaged the services of a well-known sculptor who has designed outstanding vases, bowls and book-ends for the present season.

Our list of stockholders shows a majority of the original names but a goodly number of new holders as well. In many instances in the past our stockholders have taken sufficient interest in the welfare of the company to give us leads which were productive of profitable business. We hope this will continue and when a possibility of better lighting is brought to your attention that you will speak of Holophane and notify us. And where high class gift purchases are to be made that you will remember "Verlys" glass vases and bowls.

Respectfully submitted, Charles Franck, President.

Holophane Company, Inc. (Incorporated in Delaware)

Balance Sheet as at June 30, 1940

Assets

Current Assets:			
Cash		$ 79,969.62	
Marketable securities—at cost (market value, $97,484.38)		102,233.78	
Accounts receivable:			
Customers (face, $62,070.22, less reserve, $2,000)	6,070.22		
Miscellaneous (including employees, $591.24)	1,124.14		
		61,194.36	
Accrued interest receivable on investments		694.51	
Inventories (physical inventories at the lower of cost or market)		144,557.75	
Total current assets			$388,650.02
Special Deposit:			
Cash deposited as payment for unpresented shares of preference stock called for redemption and for accrued dividends thereon			6,137.38
Investment in and Advances to Subsidiary Companies (at book value, determined from books of subsidiaries):			
The Holophane Company, Limited		52,517.56	
Verlys of America, Inc.		6,492.20	
Total investment in and advances to subsidiary companies			59,009.76
Plant Property:			
Land and buildings—at cost		312,182.18	
Machinery, equipment, etc.—at cost		155,166.02	

Molds—at company's estimate of present value	70,000.00	
Total plant property	537,348.20	
Less: Reserves for depreciation	235,423.42	
Depreciated value of plant property		301,924.78
Patents:		
Cost	298,426.38	
Less: Reserve for amortization	272,302.91	
Amortized value of patents		26,123.47
Deferred Charges:		
Unexpired insurance premiums	5,101.00	
Miscellaneous deferred charges	4,980.24	
Total deferred charges		10,081.24
		$791,926.65

Liabilities

Current Liabilities:		
Accounts payable and accrued wages (including officers and employees, $45,154.85)	$ 70,097.00	
Accrued taxes	52,211.28	
Total current liabilities		$122,308.28
Deferred Income:		
Royalty income received in advance		8,495.58
Capital Stock and Surplus:		
Capital stock:		
Preference stock without par value—entitled to annual cumulative dividends of $2.10 a share and in liquidation to $33 a share and subject to sinking fund provision, as amended, of 15 per cent of net profits after preference stock dividends for retirement at or below $33 a share; originally authorized and issued, 34,000 shares; redeemed and cancelled,		

25,136 shares; outstanding, 8,864 shares (including 185 unpresented shares called for redemption) at stated value of $20 per share	$177,280.00	
Common stock without par value — authorized 105,000 shares; issued and outstanding, 98,442 shares at stated value of $1 per share	98,442.00	
Total capital stock	275,722.00	
Earned surplus—see statement attached	385,400.79	
Total capital stock and surplus		661,122.79
		$791,926.65

[fol. 501] GOVERNMENT'S EXHIBIT 97

Semi-Annual Report of Holophane Company, Inc.
Fiscal Year Ended June 30, 1941

General Offices: 342 Madison Avenue, New York, N. Y.
Factory - Newark - Ohio

In Canada:

The Holophane Co. Ltd., 385 Yonge Street, Toronto
Holophane Company, Inc. (Incorporated in Delaware)
Condensed Statement of Income and Surplus,

Years Ended June 30, 1941 and June 30, 1940

	Year Ended June 30, 1941	Year Ended June 30, 1940
Profit from Operations	$485,592.13	$244,306.67
Plus Miscellaneous Income Credits:		
Increase of investment in subsidiaries (after provision for taxes on income and profits), interest from investments, etc.	49,137.66	37,352.68
Gross Income	534,729.79	281,659.35
Less Income Charges:		
Cash discount on sales, etc.	12,911.17	8,976.32
Net Income Before Federal Taxes on Income and Profits	521,818.62	272,683.03
Less Federal Taxes on Income and Profits	178,981.02	43,162.19
Net Income for Year After Federal Taxes on Income and Profits	342,837.60	229,520.84
Less Surplus Charge:		
Premiums paid on preference shares purchased for retirement	51,815.39	49,866.87
Surplus for Year Before Dividends	291,022.21	179,653.97
Less Dividends Declared During		

Year:		
In 1941: preference dividends, $18,472.83, common dividends, $147,663.00; In 1940: preference dividends, $24,632.18, common dividends, $123,047.25	166,135.83	147,679.43
Net Surplus for Year	124,886.38	31,974.54
Plus Earned Surplus at Beginning of Year	385,400.79	353,426.25
Earned Surplus at End of Year	$510,287.17	$385,400.79
Earnings Per Share on Common Stock	$3.29	$2.08
Number of Shares of Common Stock at End of Year	98,442	98,442
Number of Shares of Preference Stock at End of Year	4,875	8,864

Certificate of Auditors

Holophane Company, Inc.:

We have examined the books of account and related financial records of Holophane Company, Inc. for the year ended June 30, 1941, have reviewed the system of internal control and the accounting procedures of the company, and, without making a detailed audit of the transactions, have examined or tested accounting records of the company and other supporting evidence.

The engagement was undertaken for the purpose of enabling us to present to you statements which, in our judgment, would fairly set forth the results of operation of the company for the year and its financial position as at the end of the year, and was carried out by methods and to the extent we deemed appropriate to accomplish this purpose, with the exceptions noted in the next following paragraph.

The exceptions above referred to are as follows: (a) we did not confirm the accuracy of accounts receivable bal-

ances by communication with debtors; (b) we did not make or cause to be made by our representatives any physical confirmation of inventory items; (c) we determined the results of operation of The Holophane Company, Limited, and its effect upon your investment in that company by an examination of the books of account and related financial records of that company made to the extent we deemed appropriate, with the exception that we did not confirm the accuracy of accounts receivable balances by communication with debtors; and (d) we determined the results of operation of Verlys of America, Inc., and its effect upon your investment in that company by an examination of the books of account and related financial records of that company made to the extent we deemed appropriate, with the exception that we did not confirm the accuracy of accounts receivable balances by communication with debtors.

In our opinion, subject to the qualifications implicit in the exceptions noted in the preceding paragraph, the accompanying statement of income and surplus and the accompanying balance sheet fairly present the results of operation of the company for the year ended June 30, 1941 and the financial position of the company as at that date, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Eppler & Company.

New York, N. Y., August 15, 1941.

[fol. 502] October 1st, 1941.

To Stockholders:

Submitted herewith is a Balance Sheet at June 30th, 1941 and Condensed Statement of Income and Surplus for the fiscal years ended June 30th, 1941 and 1940.

As to the Report

The net income for the year amounted to $342,837.60. After provision for taxes, depreciation and other charges earnings on the common stock for the fiscal year were equivalent to $3.29 per share.

Taxes were over three times what they were last year.

The Board of Directors on September 4th, 1941 declared a dividend of $.40 on the common stock and a semi-annual dividend of $1.05 on the preference stock payable October 1st, 1941 to stockholders of record on September 15th, 1941; redemption of 2000 shares of preference stock was also authorized, leaving outstanding 2875 shares of preference stock.

As to Prospects

We are glad to report that the last six months of the fiscal year were gratifying, considering the uncertainty of present conditions. We are participating substantially in defense work while our normal business has not appreciably suffered.

Our factory facilities at Newark, Ohio, are not entirely adequate for the increased business and although in the past we have been known as prompt shippers we are now in arrears. The management, however, does not feel that in view of the temporary character of this defense work that it would be a wise policy unduly to increase our factory capacity. Instead we have made considerable progress in other directions, for instance, by retaining well known management engineers who have made recommendations which have resulted in simplifying our operations and increasing our production. Resulting benefits will be at least partially offset by increased cost of wages and material.

In order to keep pace with new developments and place our company on a sound modern research footing, we have perfected the plans and signed contracts for a chemical and physical laboratory. These progressive steps are made with the intention of maintaining the high reputation of the company for the last 41 years in the lighting industry.

Our subsidiary, The Holophane Company, Limited of Canada likewise has made considerable progress and reports that it is also engaged in defense work.

Our decorative glass subsidiary, Verlys of America, Inc., increased its business during the fiscal year ended June 30th, 1941 due somewhat to the dearth of imported orna-

mental glassware. Verlys glassware continues to enjoy an excellent reputation among large department stores, jewelry and gift shops. New models designed by prominent artists are put on the market continuously and we bespeak once more the good will of our stockholders for Verlys vases and bowls as the ideal medium price gift.

Respectfully submitted, Charles Franck, President.

Holophane Company, Inc. (Incorporated in Delaware)

Balance Sheet As At June 30, 1941

Assets

Current Assets:			
Cash		$254,598.52	
Marketable securities—at cost (quoted market value, $100,843.77)		102,971.28	
Accounts receivable:			
Trade (face, $126,817.25, less reserve for bad debts $2,000.00)	$124,817.25		
Miscellaneous (including employees, $934.40)	1,239.40		
		126,056.65	
Accrued dividend receivable from The Holophane Company, Limited		4,504.50	
Accrued interest receivable on investments		747.30	
Inventories (physical inventories at the lower of cost or market)		130,375.92	
Total current assets			$619,254.17

Investment in and Advances to Subsidary Companies (at book value, determined from books of subsidiaries):		
The Holophane Company, Limited	65,642.03	
Verlys of America, Inc.	5,017.63	
Total investment in and advances to subsidiary companies		70,659.66
Plant Property:		
Land and buildings—at cost	315,283.64	
Machinery, equipment, etc.—at cost	173,555.55	
Molds—at company's estimate of present value	70,000.00	
Total plant property	558,839.19	
Less: Reserves for depreciation	248,227.66	
Depreciated value of plant property		310,611.53
Patents:		
Cost	301,390.52	
Less: Reserve for amortization	276,748.53	
Amortized value of patents		24,641.99
Deferred Charges:		
Unexpired insurance premiums	6,223.58	
Miscellaneous deferred charges	12,483.42	
Total deferred charges		18,707.00
		$1,043,874.35
Liabilities		
Current Liabilities:		
Trade accounts payable and accrued wages (including officers and employees, $92,924.92)	$142,404.08	
Accrued federal, state, and local taxes	190,993.31	
Total current liabilities		$333,397.39

Deferred Income:		
Royalty income received in advance		4,247.79
Capital Stock and Surplus:		
Capital stock:		
Preference stock without par value—4,875 shares outstanding entitled to annual cumulative dividends of $2.10 per share and in liquidation to $33 per share and subject to sinking fund provision, as amended, of 15 per cent of net profits after preference stock dividends for retirement at or below $33 per share—at stated value of $20 per share	97,500.00	
Common stock without par value—98,442 shares outstanding at stated value of $1 per share	98,442.00	
Total capital stock	195,942.00	
Earned surplus—see statement attached	510,287.17	
Total capital stock and surplus		706,229.17
		$1,043,874.35

[fol. 503] GOVERNMENT'S EXHIBIT 98

Holophane Company, Inc.

(Illumination Service)

Annual Report

Year Ended June 30, 1942

[fol. 503a] Holophane Company, Inc.
342 Madison Avenue,
New York, N. Y.

Notice of Annual Meeting of Stockholders

The regular Annual Meeting of Stockholders of Holophane Company, Inc., will be held at the principal office of the corporation at 342 Madison Avenue, New York, New York, on Thursday, October 15, 1942, at 10:00 o'clock in the morning for the purpose of:

A: Electing directors for the coming year.

B: Ratifying the reappointment of Messrs. Eppler & Company of 50 Church Street, New York, N. Y., the present auditors of the company, and

C: For the transaction of such other business as may come before the meeting.

For the purpose of the meeting the stock transfer books were closed at the close of business on September 25th, 1942, twenty (20) days in advance of such meeting as provided in Section II, Article I of the By-Laws and will be re-opened on the morning of October 16, 1942.

For the purpose of securing a quorum, if you are unable to attend the meeting, we suggest that you affix your signature to the enclosed proxy and return it to us in the enclosed envelope.

This proxy is solicited by and in behalf of the management. It is intended that the proxy holders named therein and who were selected by the Board of Directors, will vote for the re-election of Directors then in office.

Respectfully, A. L. Rustin, Secretary.

New York, N. Y.
September 25, 1942.

[fol. 503b] Holophane Company, Inc.

Officers: Charles Franck, President; A. D. Cameron, Vice-President; Thomas W. Rolph, Vice-President; Joel B. Liberman, Vice-President and Treasurer; A. L. Rustin, Secretary.

Directors: Charles Franck, Joel B. Liberman, A. D. Cameron, H. M. Kiesewetter, John G. Jackson, Stuart R. Reed.

Executive Offices: 342 Madison Avenue, New York, N. Y.
Factory: Newark, Ohio

The Holophane Company, Limited
385 Yonge Street, Toronto, Ontario, Canada

[fol. 503c] Message to Stockholders

Digressing somewhat from the stereotyped reports customarily sent at this time, we would like to inform those stockholders who are unfamiliar with certain interesting facts and features concerning the story of the Holophane Company.

Holophane Company, Inc., (originally Holophane Glass Company) was incorporated in 1898 for the manufacture of Illuminating Appliances, principally glass globes and reflectors and holders therefor. Their products were manufactured at Newark, Ohio, where their factory is today. The enterprise was founded by Otis A. Mygatt, and he soon brought into the business a number of young engineers who became prominent in the illuminating field. It is believed that they were the first to develop the modern presentation of practical illuminating engineering. Two of these earlier Holophone engineers, together with the late Lewis Marks, were the moving spirits which founded the Illuminating Engineering Society and Holophane associates founded the original magazine "Illuminating Engineer" which is still published in England. Other Holophane companies were founded in Toronto, London and Paris and our products are sold throughout the world. Holophane products are recognized from a scientific as well as a practical viewpoint, awards having been made by the Franklin Institute, Paris Exposition, etc.

The present Holophane factory at Newark, Ohio, was built in 1918, the management of the business having been taken over in 1916 by the present President and General Manager, Charles Franck. In 1925 Mr. Franck arranged with other employees and friends of the company to buy the company from the Mygatt interests. In 1929 the shares were more widely distributed and shortly thereafter the present management with its various departments was inaugurated with men who had worked for the company or in kindred fields. These men who are well known throughout the country are: President, Charles Franck; Manager, A. D. Cameron; Chief Engineer, Thomas W. Rolph, etc. The above have long been recognized as experts in the illuminating field, Mr. Rolph having been named as a modern pioneer of the frontier of American industry by the National Association of Manufacturers, and Mr. Cameron just lately retired as President of the illuminating Engineering Society.

In 1925 when the present management assumed independent operation, your President, Charles Franck, planned the reorganization so that all those employees who desired it could purchase shares in the company on equal terms. Today (17 years later) these employees are still holders of a considerable share of the company's stock. We are happy to state that without question this more intimate attachment to the Company by these employees made for greater personal interest and correspondingly increased stimulus in the Company's welfare, as evidenced by the following:

1. The labor turnover is negligible and among our pressers, foremen and other skilled laborers, all members of the A. F. of L., a considerable number have been with us since our Newark, Ohio, factory was constructed in 1918.
2. The average time of service of 23 engineers, consultants and sales engineer representatives in the field employed at present amounts to 13½ years.
3. The average years of service among 9 employees, consisting of 4 officers and 5 factory superintendents and assistant superintendents amount to date to 24 years.

We mentioned in our last letter to stockholders, dated April 1, 1942, that close to 100% of our orders fell under

priority ratings and can only state at this date that the entire output of our factory with absolutely negligible exceptions is used in connection with war efforts. We are very fortunate in being able to sell our standard products, that is light-controlling prismatic glassware and fixtures for existing war requirements without any serious conversion of plant facilities. Naturally, where necessary, we simplified the line and added certain important units which would particularly apply to war efforts. A typical case is the creation of the Holophane Blackout Unit.

We are also glad to state that the material required for prismatic glass is not on the so-called "critical list" as compared with the majority of other industrial lighting manufacturers who have to depend largely on metallic substances for the manufacture of their equipment.

We have begun a national campaign on behalf of "Reduction in Industrial Accidents" which subject has been stressed by President Roosevelt, the War Production Board and numerous other important agencies. This is borne out by the fact that the latest bulletin issued by the War Production Board by order of Mr. Donald Nelson, called "Plant Efficiency," features as its first heading the title "Good Lighting—Better Work." The Board has, therefore, recognized the importance this subject deserves in its publication and stresses therein particularly the reduction in accidents which good lighting can accomplish.

We are taking the liberty of enclosing certain pages from a booklet called Holophane Controlled Lighting which appears in Sweet's Industrial Catalog File and which give characteristic illustrations of the Holophane lighting units supplied to the war industries.

Submitted herewith is a Balance Sheet as at June 30, 1942 and Condensed Statement of Income and Surplus for the years ended June 30, 1942 and June 30, 1941 which require no further explanation.

At a Directors' meeting held on September 1, 1942, a dividend of 50 cents was declared payable October 1, 1942, to holders of common stock of record September 15, 1942, and a semi-annual dividend of $1.05 payable October 1,

1942 to holders of preference stock of record September 15, 1942. It is interesting to note that of the original (1929) 34,000 preference shares, 31,165 shares have been redeemed leaving a balance of 2,835 shares outstanding as of this date.

As to the future prospects of the Company, it seems almost impossible for anyone at the present state of affairs to make any accurate forecast other than to state that our financial situation remains sound, that our factory is in the best condition it ever has been for producing quickly, promptly and at reasonable cost, and that the employees of the Company are as keen as ever to give the best that is in them for continued furtherance of the business.

Respectfully yours, Charles Franck, President.

September 25, 1942.

[fol. 503d] Holophane Company, Inc.

(Incorporated in Delaware)

Balance Sheet as at June 30, 1942

Assets

Current Assets:			
Cash		$480,107.31	
Marketable securities — at cost (quoted market value, $254,959.38)		257,953.88	
Accounts receivable:			
Trade (face, $178,851.99, less reserve for bad debts, $2,000.00)	$176,851.99		
Miscellaneous	4,618.12		
		181,470.11	
Accrued interest receivable on investments		1,569.11	
Inventories (physical inventories at the lower of cost or market)		164,879.66	
Total current assets			$1,085,980.07

Investment in and Advances to Subsidiary Companies (at book value, determined from books of subsidiaries):		
The Holophane Company, Limited	79,253.26	
Verlys of America, Inc.	3,836.66	
Total investment in and advances to subsidiary companies		83,089.92
Plant Property:		
Land and buildings—at cost	368,232.61	
Machinery, equipment, etc.—at cost	189,124.54	
Molds—at company's estimate of cost less accrued depreciation	70,000.00	
Total plant property	627,357.15	
Less: Reserves for depreciation	255,767.41	
Depreciated value of plant property		371,589.74
Patents:		
Cost	304,242.80	
Less: Reserve for amortization	280,802.17	
Amortized value of patents		23,440.63
Deferred Charges:		
Unexpired insurance premiums	9,542.83	
Miscellaneous deferred charges	18,446.51	27,989.34
Total deferred charges		$1,592,089.70

Liabilities

Current Liabilities:		
Trade accounts payable and accrued wages (including officers and employees, $165,285.58)	$229,220.40	
Accrued federal, state, and local taxes	509,123.11	
Total current liabilities		$ 738,343.51

Capital Stock and Surplus:			
Capital stock:			
Preference stock without par value — 2,865 shares outstanding at stated value of $20 per share — entitled to annual cumulative dividends of $2.10 per share and in liquidation to $33 per share, and subject to sinking fund provision, as amended, of 15 per cent of net profits after preference stock dividends for retirement at or below $33 per share ...	$ 57,300.00		
Common stock without par value — 98,442 shares outstanding at stated value of $1 per share	98,442.00		
Total capital stock		155,742.00	
Surplus:			
Surplus—See statement attached ..	$616,004.19		
Reserve for proposed retroactive federal taxes	82,000.00		
Total surplus		698,004.19	
Total capital stock and surplus			853,746.19
			$1,592,089.70

[fol. 503e] Holophane Company, Inc.

(Incorporated in Delaware)

Condensed Statement of Income and Surplus Years Ended June 30, 1942 and June 30, 1941

	Year Ended June 30, 1942	Year Ended June 30, 1941
Profit from Operations	$870,737.22	$485,592.13
Plus Miscellaneous Income Credits:		
Increase of investment in subsidiaries (after provision for taxes on income and profits), interest from investments, etc.	53,449.83	49,137.66
Gross Income	924,187.05	534,729.79
Less Income Charges:		
Cash discount on sales, etc.	20,976.77	12,911.17
Net Income Before Federal Taxes on Income and Profits	903,210.28	521,818.62
Less Federal Taxes on Income and Profits	498,939.81	178,981.02
Net Income for Year After Federal Taxes on Income and Profits	404,270.47	342,837.60
Less Surplus Charges:		
Premiums on preference shares called for redemption: In 1942, 2,010 shares; in 1941, 3,989 shares	26,128.75	51,815.39
Provision for proposed retroactive federal taxes	82,000.00	.....
Total surplus charges	108,128.75	51,815.39
Surplus for Year Before Dividends	296,141.72	291,022.21

Less Dividends Declared During Year:		
In 1942, preference dividends, $8,307.00, and common dividends, $182,117.70; in 1941, preference dividends, $18,472.83, and common dividends, $147,663.00	190,424.70	166,135.83
Net Surplus for Year	105,717.02	124,886.38
Plus Surplus at Beginning of Year	510,287.17	385,400.79
Net Surplus at End of Year	$616,004.19	$510,287.17
Earnings Per Share on Common Stock	$ 4.02	$ 3.29
Number of Shares of Common Stock at End of Year	98,442	98,442
Number of Shares of Preference Stock at End of Year	2,865	4,875

Certificate of Auditors

Holophane Company, Inc.:

We have examined the statement of income and surplus of Holophane Company, Inc., for the year ended June 30, 1942, and the related balance sheet as at the said date, have reviewed the system of internal control and the accounting procedures of the company, and, without making a detailed audit of the transactions, have examined or tested accounting records of the company and other supporting evidence.

The engagement was undertaken for the purpose of enabling us to express an independent opinion in respect to the financial statements, and was carried out by methods and to the extent we deemed appropriate to accomplish this purpose, with the exceptions noted in the next following paragraph.

The exceptions above referred to are as follows: (a) we did not confirm the accuracy of accounts receivable balances by communication with debtors; (b) we did not

make nor cause to be made by our representatives any physical confirmation of inventory items; (c) we determined the results of operations of The Holophane Company, Limited, and its effect upon your investment in that company by an examination of the statement of income and surplus and the related balance sheet of that company made to the extent we deemed appropriate, with the exception that we did not confirm the accuracy of accounts receivable balances by communication with debtors.

In our opinion, subject to the qualifications implicit in the exceptions noted in the preceding paragraph, the accompanying statement of income and surplus and the accompanying balance sheet fairly present the results of operations of the company for the year ended June 30, 1942 and the financial position of the company as at that date, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Eppler & Company.

New York, N. Y., July 30, 1942.

[fol. 504] GOVERNMENT'S EXHIBIT 99

Holophane Company, Inc.

(Illumination Service)

Annual Report

Year Ended June 30, 1943

Officers: Charles Franck, President; A. D. Cameron, Vice-President; Thomas W. Rolph, Vice-President; Joel B. Liberman, Vice-President and Treasurer; A. L. Rustin, Secretary.

Directors: Charles Franck, John G. Jackson, A. D. Cameron, Joel B. Liberman, H. M. Kiesewetter, Stuart R. Reed.

Executive Offices: 342 Madison Avenue
New York 17, N. Y.

Factory: Newark, Ohio

The Holophane Company, Limited
385 Yonge Street, Toronto, Ontario, Canada

[fol. 504a] To the Stockholders:

Submitted herewith is the Balance Sheet as at the end of our fiscal year, June 30, 1943, and Condensed Statement of Income and Surplus for the years ended June 30, 1943 and June 30, 1942.

At the Directors' meeting held September 9, 1943, a dividend of thirty cents ($.30) was declared payable October 1, 1943 to holders of common stock of record September 15, 1943, and a semi-annual dividend of $1.05 payable October 1, 1943 to holders of preference stock of record September 15, 1943. At this time we wish to point out again that of the original (1929) 34,000 preference shares, 32,776 shares have been redeemed, leaving a balance of only 1,224 shares outstanding as of this date. We expect that all of these shares will be redeemed in the present fiscal year.

During the past fiscal year the business has progressed satisfactorily, although the Income and Excess profits taxes, amounting to approximately $7.00 per share have reduced the net per share earnings. Our Company has maintained

a strong financial position which is believed to be of great importance under present day conditions and the uncertainties of the future.

Our backlog has been reduced in recent months and we must count primarily on continued incoming business which, although affected by the curtailment of new construction in war plant planning, is satisfactory. Likewise, our factory at Newark, Ohio, is running smoothly and efficiently on the reduced schedule. Our factory is engaged entirely on war requirements but if the restrictions of the War Production Board, which we are observing most rigidly, should be lifted we will lose no time in entering our regular field of civilian requirements.

Planning for post-war operation remains foremost in the mind of the management and continuous thought is being given to after-war activities of your Company.

The advancement of "plastics" has been greatly exploited. Glass, discovered many centuries ago, might be termed one of the original plastics. The inherent qualities of crystal glass are so far superior to what has been produced through modern plastics for our purposes, that we have no doubt about the continued successful use of our product. Glass is still the only "plastic" which combines all of the following characteristics. It is:

(1) Crystal clear,
(2) Water repellant,
(3) Scratch resistant, and
(4) It does not warp at high temperatures.

We expect to acquire from Holophane Limited of London the Holophane South American business and our Company will then control the manufacture and sale of Holophane products in both Americas. The writer within the next few months will endeavor to visit personally the principal South American countries and Mexico, with the intention of acquiring information and making contacts which will enable us to exploit the new territory vigorously immediately after the war.

Our employee relations have continued on a most satisfactory standard as in the past and it is a privilege to commend highly the outstanding service rendered by the men

and women of the Company and to pay tribute to those serving in the armed forces. The purchase of War Bonds on the part of our employees continues at a satisfactory rate. We are pleased to announce the formation of a Holophane 25-year Service Club which at present has fifteen members.

I take the opportunity of expressing my appreciation of the loyal and able cooperation on the part of the Directors, Officers and Employees of the Company, and your Directors join with me in acknowledging and thanking you for your continued interest.

Respectfully submitted, Charles Franck, President.

October 1, 1943.

P.S.—In the interest of conservation of paper, this letter and report are presented to you in the most economical form.

[fol. 504b] Holophane Company, Inc.

(Incorporated in Delaware)

Balance Sheet as at June 30, 1943

Assets

Current Assets:		
Cash	$330,163.15	
Less: Amount applicable to sinking fund below	41,732.27	
		$288,430.88
Marketable securities — at cost (quoted market value, $327,857.82)	329,914.82	
Accounts receivable:		
Trade (face, $79,458.54, less reserve for bad debts, $2,000.00)	$77,458.54	
Miscellaneous	2,489.56	
		79,948.10

Accrued interest receivable on marketable securities	2,008.05	
Inventories (physical inventories at the lower of cost or market)	208,023.77	
Total current assets		$ 908,325.6
Sinking fund for retirement of preference stock		41,732.2
Post-war refund of excess profits tax		65,732.7
Investment in and advances to subsidiary companies (at book value, determined from books of subsidiaries):		
The Holophane Company, Limited	95,821.64	
Verlys of America, Inc.....	3,367.36	
Total investment in and advances to subsidiary companies		99,189.0
Plant property:		
Land and buildings—at cost ...	368,922.53	
Machinery, equipment, etc.—at cost	193,565.69	
Molds—at company's estimate of cost less accrued depreciation	70,000.00	
Total plant property	632,488.22	
Less: Reserves for depreciation.	275,213.89	
Depreciated value of plant property		357,274.3
Patents:		
Cost	306,377.91	
Less: Reserve for amortization.	284,193.36	
Amortized value of patents...		22,184.5
Deferred charges:		
Unexpired insurance premiums	7,087.52	
Miscellaneous deferred charges.	7,073.10	
Total deferred charges		14,160.6
		$1,508,599.1

Liabilities

Current liabilities:			
Trade accounts payable and accrued wages (including compensation due to officers and employees)		$173,532.41	
Accrued federal income and excess profits taxes	$754,338.55		
Less: United States Treasury Tax Notes and accrued interest	358,219.56		
		396,118.99	
Accrued state and other taxes		12,060.10	
Total current liabilities			$ 581,711.50
Capital stock and surplus:			
Capital stock:			
Preference stock without par value — 2,724 shares outstanding at stated value of $20 per share — entitled to annual cumulative dividends of $2.10 per share and in liquidation to $33 per share, and subject to sinking fund provision, as amended, of 15 per cent of net profits after preference stock dividends for retirement at or below $33 per share		$54,480.00	

Common stock without par value — 98,442 shares outstanding at stated value of $1 per share	98,442.00		
Total capital stock		152,922.00	
Surplus:			
Surplus—see statement attached ..	$673,965.64		
Reserve for contingencies	100,000.00		
Total surplus		773,965.64	
Total capital stock and surplus			926,887.64
			$1,508,599.14

[fol. 504c] Holophane Company, Inc.

(Incorporated in Delaware)

Condensed Statement of Income and Surplus, Years Ended June 30, 1943 and June 30, 1942

	Year Ended June 30, 1943	June 30, 1942
Profit from Operations.....	$ 985,226.27	$ 870,737.22
Plus Miscellaneous Income Credits:		
Net income of subsidiaries (after provision for taxes on income and profits), interest from bonds, etc.....	43,845.42	53,426.87
Gross Income	1,029,071.69	924,164.09
Less Income Charges:		
Cash discount on sales, etc...	26,408.00	20,953.81
Net Income Before Federal Taxes on Income and Profits	1,002,663.69	903,210.28

Less Federal Taxes on Income and Profits (including, in 1943, deduction of $65,732.75 for post-far refund of excess profits tax)	687,646.49	498,939.81
Net Income for Year After Federal Taxes on Income and Profits	315,017.20	404,270.47
Less Surplus Charges:		
Premiums on preference shares purchased or called for redemption: In 1943, 141 shares; in 1942, 2,010 shares	1,815.00	26,128.75
Provision for reserve for contingencies	18,000.00	82,000.00
Total surplus charges	19,815.00	108,128.75
Surplus for Year Before Dividends	295,202.20	296,141.72
Less Dividends Declared During Year: In 1943, preference dividends, $5,902.05, and common dividends, $231,338.70; in 1942, preference dividends, $8,307.00, and common dividends, $182,117.70	237,240.75	190,424.70
Net Surplus for Year	57,961.45	105,717.02
Plus Surplus at Beginning of year	616,004.19	510,287.17
Surplus at End of Year	$673,965.64	$616,004.19
Earnings Per Share on Common Stock	$ 3.14	$ 4.02
Number of Shares of Common Stock at End of Year	98,442	98,442
Number of Shares of Preference Stock at End of Year	2,724	2,865

Certificate of Auditors

Holophane Company, Inc.:

We have examined the statement of income and surplus of Holophane Company, Inc., for the year ended June 30, 1943, and the related balance sheet as at the said date, have reviewed the system of internal control and the accounting procedures of the company, and, without making a detailed audit of the transactions, have inspected or tested accounting records of the company and other supporting evidence.

The examination and review were undertaken for the purpose of enabling us to express our independent opinion in respect of the said financial statements, and were carried out by methods and to the extent we deemed appropriate to accomplish this purpose, with the exceptions noted in the next following paragraph.

The exceptions above referred to are as follows: (a) we did not confirm the accuracy of accounts receivable balances by communication with debtors; (b) we did not make or cause to be made by our representatives any physical confirmation of inventory items; and (c) we determined the results of operations of The Holophane Company, Limited, and its effect upon your investment in that company by an examination of the statement of income and surplus and the related balance sheet of that company made to the extent we deemed appropriate, with the exception that we did not confirm the accuracy of accounts receivable balances by communication with debtors.

In our opinion, subject to the qualifications implicit in the exceptions noted in the preceding paragraph, the accompanying statement of income and surplus and the accompanying balance sheet fairly present the results of operations of the company for the year ended June 30, 1943 and the financial position of the company as at that date, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Eppler & Company.

New York, N. Y., July 28, 1943.

[fol. 505] GOVERNMENT'S EXHIBIT 100

Holophane Company, Inc.

(Illumination Service)

Annual Report

Year Ended June 30, 1944

[fol. 505a] Holophane Company, Inc.

Officers: Charles Franck, Chairman of the Board of Directors; Thomas W. Rolph, President; Joel B. Liberman, Vice-President and Treasurer; A. L. Rustin, Secretary.

Directors: Charles Franck, Thomas W. Rolph, Joel B. Liberman, H. M. Kiesewetter, Howard J. Tait.

Executive Offices: 342 Madison Avenue
New York 17, N. Y.

Factory: Newark, Ohio

The Holophane Company, Limited

385 Yonge Street, Toronto, Ontario, Canada

Accountants and Auditors

Peat, Marwick, Mitchell & Co.
70 Pine Street, New York 5, N. Y.

[fol. 505b] To the Stockholders:

Submitted herewith is a balance sheet as at June 30, 1944, the end of our fiscal year, and Condensed Statement of Income and Surplus for the years ended June 30, 1944 and June 30, 1943. At a Directors' Meeting held July 31, 1944 a dividend of thirty cents ($.30) was declared payable August 21, 1944, to holders of common stock of record August 10, 1944, and a semi-annual dividend of $1.05 payable October 2, 1944 to holders of preference stock of record September 15, 1944.

In accordance with our sinking fund requirements, 410 preference shares are in the course of redemption leaving a balance of 714 shares of preference stock outstanding. The original issue in the year 1929 was of 34,000 shares, the balance having been redeemed since that time.

It will be seen that our business for the past fiscal year

shows a considerable decrease over the preceding year, owing to general conditions over which we have no control. The amount of new construction work for war requirements has greatly fallen off while on the other hand the limitations on civilian business are still in effect to a great extent. However, the results obtained during the fiscal year just passed, all things considered, are in line with other similar enterprises and the financial situation of the company remains sound. The relatively small increase in earned surplus is principally due to the fact that there was deducted from previous surplus the net settlement for Renegotiation for the year ended June 30, 1943 an amount of $85,500 which was the net final amount agreed upon between the War Contracts Price Adjustment Board of the government and ourselves. Of this amount, $40,500 of the post-war refund credit applicable to such year, will be used as part payment and the balance, $45,000 will be paid in cash. There was also a claim, still unsettled at the time of the closing of the books, under the heading of Renegotiation for about three months of the fiscal year ended June 30, 1942, but we have since also come to an agreement with the government representatives for this period in the net amount of $22,331.16, although this adjustment does not appear in the present statements. In the present accounts, however, a provision for contingencies including Renegotiation of war contracts for the fiscal year submitted in the net amount of $10,500 will be found. This figure is an approximation based on past experience with the War Contracts Price Adjustment Board.

Although our backlog has been reduced, it still remains substantial. Our factory at Newark, Ohio, is running efficiently, and additional equipment for application of further processing of high impact glass, known under our trade mark "Hi-Stress" has been ordered and is expected to be installed before the end of this year. This glass has been accepted as standard by the United States Navy and we have been receiving substantial orders from them which should continue after the war.

In connection with the post-war situation, we appear to be in a particularly favorable position as compared with many other factories which have worked primarily on war

requirements, because we will not be faced with any reconversion problems.

Our Engineering and Commercial Departments continue actively on post-war developments, so that when civilian requirements will again become the main part of our business, we feel confident that we will be in a good position to take care of same effectively.

The factory at Newark, Ohio, was awarded on July 18th, the Army-Navy "E" pennant, and an appropriate ceremony was held near the factory at that time.

Regarding our recent acquisition of rights in the South American field from Holophane Limited we are actively engaged in laying our plans for handling this new territory in an efficient and profitable manner. The initial trip to the Republic of Mexico, made by your President earlier this year, has brought about a definite distribution arrangement. It is anticipated that the exploitation of the greater part of the South American territory must be postponed until the end of the European war.

Our employee relations continue on a most satisfactory standard as in the past, and it is a privilege to commend highly, the outstanding service rendered by the men and women of the company. We further wish to pay tribute to the fifty-six men and women serving in the Armed Forces.

At this opportunity, I would like to express my personal appreciation of the loyalty and cooperation on the part of the Directors, Officers and Employees of the company, and your Directors join with me in acknowledging and thanking you for your continued interest.

Respectfully submitted, Charles Franck, President.

October 2, 1944.

[fol. 505c] Holophane Company, Inc.

(Incorporated in Delaware)

Balance Sheet as at June 30, 1944

Assets

Current Assets:			
Cash	$97,035.92		
Less: Amount applicable to sinking fund below	13,379.91		
		$ 83,656.01	
Marketable securities — at cost (quoted market value, $328,885.95)		327,541.38	
Accounts receivable:			
Trade (face, $78,509.62, less reserve for bad debts, $2,000.00)	$76,509.62		
Miscellaneous	2,931.72		
		79,441.34	
Accrued interest receivable on marketable securities		2,131.11	
Inventories (physical inventories at the lower of cost or market)		138,075.49	
Total current assets			$ 630,845.33
Sinking Fund for Retirement of Preference Stock			13,379.91
Post-War Refund of Excess Profits Tax			37,152.13
Investment in and Advances to Subsidiary Companies) at book value, determined from books of subsidiaries):			
The Holophane Company, Limited		87,524.17	
Verlys of America, Inc.		1,903.74	
Total investment in and advances to subsidiary companies			89,427.91

Plant Property:		
Land and buildings—at cost ..	372,927.44	
Machinery, equipment, etc.—at cost	197,225.05	
Molds—at fixed value	70,000.00	
Total plant property	640,152.49	
Less: Reserves for depreciation	294,812.68	
Depreciated value of plant property		345,339.81
Patents:		
Cost	62,118.08	
Less: Reserve for amortization	33,821.99	
		28,296.09
Amotized value of patents		6,516.86
Deferred Charges:		
Unexpired insurance premiums.	5,460.89	
Miscellaneous deferred charges.	1,055.97	
Total deferred charges....		6,516.86
		$1,150,958.04

Liabilities

Current Liabilities:		
Trade accounts payable and accrued wages (including compensation due to officers and employees)	$ 62,661.40	
Accrued federal income and excess profits taxes	214,267.46	
Accrued state and other taxes..	8,385.16	
Liability for renegotiation of war contracts for the fiscal year ended June 30, 1943	45,000.00	
Liability for contingencies, including renegotiation of war contracts for the fiscal year ended June 30, 1944	10,500.00	
Total current liabilities		$ 340,814.02

Capital Stock and Surplus:			
Capital stock:			
Preference stock without par value — 1,124 shares outstanding at stated value of $20 per share—entitled to annual cumulative dividends of $2.10 per share and in liquidation to $33 per share, and subject to sinking fund provision, as amended, of 15 per cent of net profits after preference stock dividends for retirement at or below $33 per share	$22,480.00		
Common stock without par value — 98,442 shares outstanding at stated value of $1 per share	98,442.00		
Total capital stock		120,922.00	
Surplus—see statement attached		689,222.02	
Total capital stock and surplus			810,144.02
			$1,150,958.04

[fol. 505d] Holophane Company, Inc.

(Incorporated in Delaware)

Condensed Statement of Income and Surplus, Years Ended June 30, 1944 and June 30, 1943

	1944	1943
Profit from Operations	$363,024.37	$ 985,226.27
Plus Miscellaneous Income Credits:		
Net income of subsidiaries (after provision for taxes on income and profits), interest from bonds, etc.	30,122.87	43,845.42
Gross Income	393,147.24	1,029,071.69
Less Income Charges:		
Provision for contingencies, including renegotiation of war contracts	10,500.00	.....
Cash discount on sales, etc.	13,947.82	26,408.00
Total income charges	24,447.82	26,408.00
Net Income for Year Before Federal Taxes on Income and Profits	368,699.42	1,002,663.69
Less Federal Taxes on Income and Profits (including deduction for post-war refund of excess profits tax—in 1944, $11,919.38; in 1943, $65,732.75)	202,231.44	687,646.49
Net Income for Year After Federal Taxes on Income and Profits	166,467.98	315,017.20
Plus Surplus Credit:		
Balance in reserve for contingencies restored to surplus	100,000.00	.....
	266,467.98	315,017.20

Less Surplus Charges:		
Premiums on preference shares purchased and called for redemption:		
In 1944, 1,600 shares; in 1943, 141 shares	20,775.00	1,815.00
Addition to reserve for contingencies	.....	18,000.00
Net settlement for renegotiation of war contracts for the fiscal year ended June 30, 1943	85,500.00	.....
Purchase during current year of property, trademarks, and good will in South America including adjacent islands, the West Indies, Bahamas, and the island of Bermuda	33,000.00	.....
Total surplus charges	139,275.00	19,815.00
Surplus for Year Before Dividends	127,192.98	295,202.20
Less Dividends Declared During Year:		
In 1944, preference dividends, $3,650.40, and common dividends, $108,286.20; in 1943, preference dividends, $5,902.05, and common dividends, $231,338.70	111,936.60	237,240.75
Net Surplus for Year	15,256.38	57,961.45
Plus Surplus at Beginning of Year	673,965.64	616,004.19
Surplus at End of Year	$689,222.02	$ 673,965.64
Earnings Per Share on Common Stock	$1.65	$3.14
Number of Shares of Common Stock at End of Year	98,442	98,442
Number of shares of Preference Stock at End of Year	1,124	2,724

Certificate of Auditors

Holophane Company, Inc.:

We have examined the statement of income and surplus of Holophane Company, Inc. for the year ended June 30, 1944, and the related balance sheet as at the said date, have reviewed the system of internal control and the accounting procedures of the company, and, without making a detailed audit of the transactions, have inspected or tested accounting records of the company and other supporting evidence.

The examination and review were undertaken for the purpose of enabling us to express our independent opinion in respect of the said financial statements, and were carried out by methods and to the extent we deemed appropriate to accomplish that purpose, with the exceptions noted in the next following paragraph.

The exceptions above referred to are as follows: (a) we did not confirm the accuracy of accounts receivable balances by communi-ation with debtors; (b) we did not make or cause to be made by our representatives any physical confirmation of inventory items; and (c) we determined the results of operations of The Holophane Company, Limited, and its effect upon your investment in that company by an examination of the statement of income and surplus and the related balance sheet of that company made to the extent we deemed appropriate, with the exception that we did not confirm the accuracy of accounts receivable balances by communication with debtors.

In our opinion, subject to the qualifications implicit in the exceptions noted in the preceding paragraph, the accompanying statement of income and surplus and the accompanying balance sheet fairly present the results of operations of the company for the year ended June 30, 1944 and the financial position of the company as at that date, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

New York, N. Y., July 31, 1944.

[fol. 505e] The Men and Women of
Holophane Company, Inc.

are proud to announce that the
Army-Navy "E" Award
for Outstanding Production of War Materials
was made to their Company on July 18th, 1944

Holophane Company, Inc.

342 Madison Avenue, New York 17, N. Y.

Notice of Annual Meeting of Stockholders

The regular Annual Meeting of Stockholders of Holophane Company, Inc., will be held at the principal office of the corporation at 342 Madison Avenue, New York 17, New York, on Thursday, October 19, 1944, at 10:00 o'clock in the morning for the purpose of:

A: Electing directors for the coming year, and
B: For the transaction of such other business as may come before the meeting.

For the purpose of the meeting the stock transfer books were closed at the close of business on September 29, 1944, twenty (20) days in advance of such meeting as provided in Section II, Article I of the By-Laws and will be re-opened on the morning of October 20, 1944.

For the purpose of securing a quorum, if you are unable to attend the meeting, we suggest that you affix your signature to the enclosed proxy and return it to us in the enclosed envelope.

This proxy is solicited by and in behalf of the management. It is intended that the proxy holders named therein and who were selected by the Board of Directors, will vote for the re-election of Directors then in office.

Respectfully, A. L. Rustin, Secretary.

New York, N. Y., September 29, 1944.

[fol. 506] GOVERNMENT'S EXHIBIT 101

Holophane Company, Inc. (Illumination Service)
Annual Report

Year Ended June 30, 1945

[fol. 506a] Holophane Company, Inc.

Officers: Charles Franck, President; A. D. Cameron, Vice-President; Thomas W. Rolph, Vice-President; Joel B. Liberman, Vice-President and Treasurer; A. L. Rustin, Secretary.

Directors: Charles Franck, Joel B. Liberman, A. D. Cameron, Thomas W. Rolph, H. M. Kiesewetter, John G. Jackson, Stuart R. Reed.

Executive Offices
342 Madison Avenue, New York 17, N. Y.

Factory: Newark, Ohio

The Holophane Company, Limited
385 Yonge Street, Toronto, Ontario, Canada

Accountants and Auditors

Peat, Marwick, Mitchell & Co.
70 Pine Street, New York 5, N. Y.

[fol. 506b] To the Stockholders,
Holophane Company, Inc.

Submitted herewith is a balance sheet as of June 30, 1945, the end of our fiscal year, and Condensed Statement of Income and Surplus for the years ended June 30, 1945 and June 30, 1944. At a Directors' Meeting held September 6, 1945 a dividend of Thirty cents ($.30) was declared payable October 1, 1945 to stockholders of record September 15, 1945.

The Company now has no stock outstanding except 98,442 shares of common stock. The Company was reorganized in 1929 when 34,000 shares of preference stock was issued. This preference stock has been entirely redeemed out of Company earnings since that time at a cost of approximately $1,000,000.00. The formal cancel-

lation of such stock has been effected and all reference thereto is being cancelled in the Company's charter and by-laws.

At the September 6 meeting the Board elected our Vice-President and Chief Engineer, Mr. Thomas W. Rolph of Newark, Ohio, as an additional Director. Mr. Rolph has been associated with our Company for nearly twenty-five years and is in charge of the factory.

While the business for the past fiscal year shows a small decrease over the preceding year, the actual results indicated in the net profits have been more favorable. This is due principally to a decrease in the amount of Federal taxes on income and profits, and the omitting of a provision for renegotiation of war contracts since the management feels that no additional assessments for renegotiation purposes are expected.

The backlog on unfilled orders has substantially increased even considering possible further cancellations, and promises continued full operation of our factory facilities. Our factory at Newark, Ohio, continues to run efficiently and the additional equipment reported earlier of an electric furnace for the processing of our high-impact glass sold under the trade mark "Hi-Stress" has proven very satisfactory. We are now in a postwar era but, as stated previously, will not be faced with any serious reconversion problems. Nevertheless, the management expects to acquire additional equipment that should help to produce more economically.

Postwar: Our postwar plans started with a meeting in September 1943 at which all our development and field engineers were present. A definite program was formulated and has been consistently followed ever since with the result that we are now in production of Holophane "Holoflux" (trade mark) industrial and commercial fluorescent units which will assure the finest quality of controlled lighting performance obtainable with fluorescent lamps. Holophane Hi-Stress (high-impact glass), a product of Holophane research was accepted as a standard by the U. S. Navy for a considerable variety of types used on government vessels. The same process will be applied to lighting by industrial Hi-Bay units and wherever neces-

sary on street lighting refractors. The main fields for our postwar activities are, in my opinion, the lighting of streets, schools, hospitals, institutions, stores, and farms.

As an interesting feature in connection with our national past endeavors, it may be said that the two big "mystery" plants at Oak Ridge, Tennessee and Hanford, Washington which produced the famous atomic bombs, and covered close to 500,000 acres and employed over 125,000 people, were lighted to the greatest extent by Holophane units. It was the result of close field contacts and services rendered by our sales engineers at four different points.

Our Company was awarded on September 11, 1945 the second renewal of the Army-Navy "E" Award.

Your management is fully aware of the necessity of further enhancing employer-labor relations for mutual benefit and with this in mind has already introduced several changes that assure our loyal employees increased earnings. We hope and have good reason to believe that the majority of our service men and women will come back to the Company upon their release from the armed forces.

At this opportunity I again would like to express my personal appreciation of the loyalty and cooperation on the part of the directors, officers and employees of the Company, and your directors join with me in acknowledging and thanking you for your continued interest.

Respectfully submitted, Charles Franck, President.

September 28, 1945.

[fol. 506c] Holophane Company, Inc.

Balance Sheet as of June 30, 1945

Assets

Current Assets:		
Cash		$ 77,758.69
Marketable securities—at cost (quoted market value, $194,641.58)		194,541.38
Accounts receivable:		
Trade, less reserve for doubtful accounts, $2,000.00	$105,177.62	
Other	3,982.89	109,160.51
Accrued interest receivable		1,701.94
Inventories—at not more than the lower of cost or market		207,796.53
Total Current Assets		$ 590,959.05
Postwar Refund of Excess Profits Tax		36,387.30
Investment in and Advances to Subsidiary Companies (at book value, determined from books of subsidiaries):		
The Holophane Company, Limited	81,021.05	
Verlys of America, Inc.	4,964.06	85,985.11
Plant Property:		
Land and buildings—at cost	399,787.30	
Machinery, equipment, etc.—at cost	200,435.95	
Molds—at fixed value	70,000.00	
	670,223.25	
Less Reserve for depreciation	317,319.65	352,903.60
Patents:		
Cost	59,771.14	
Less Reserve for amortization	32,915.31	26,855.83
Deferred Charges:		
Unexpired insurance premiums	6,274.16	
Other	2,016.39	8,290.55
		$1,101,381.44

Liabilities

Current Liabilities:		
Trade accounts payable and accrued expenses (including compensation due to officers and employees)		$ 115,421.13
Accrued Federal income and excess profits taxes		159,293.75
Accrued taxes—other		11,898.52
Total Current Liabilities		286,613.40
Capital Stock and Surplus:		
Capital stock:		
Authorized, 105,000 shares without par value. Issued and outstanding, 98,442 shares—at stated value of $1.00 per share	$ 98,442.00	
Surplus (see Note)	716,326.04	814,768.04
Note: No provision has been made for possible refund of profits for the year ended June 30, 1945 under the requirements of the Renegotiation Act of 1943. It is not believed that any refund will be required.		
		$1,101,381.44

[fol. 506d] Holophane Company, Inc.

Condensed Statement of Income and Surplus, Years Ended June 30, 1945 and June 30, 1944

	1945	1944
Profit from Operations	$290,496.64	$363,024.37
Plus Income Credits:		
Net income of subsidiaries (after provision for taxes on income and profits), interest from bonds, etc.	42,225.64	27,858.81
Gross Income	332,722.28	390,883.18

Less Income Charges:		
Provision for contingencies, including renegotiation of war contracts (see Note)	.....	10,500.00
Cash discount on sales, etc.....	10,534.24	11,683.76
Total income charges.....	10,534.24	22,183.76
Net Income for Year Before Federal Taxes on Income and Profits	322,188.04	368,699.42
Less Federal Taxes on Income and Profits (including deduction for postwar refund of excess profits tax—in 1945, $6,171.64; in 1944, $11,919.38)	150,861.58	202,231.44
Net Income for the Year After Federal Taxes on Income and Profits	171,326.46	166,467.98
Plus Surplus Credit:		
Balance in reserve for contingencies restored to surplus...	.....	100,000.00
	171,326.46	266,467.98
Less Surplus Charges:		
Premiums on preference shares purchased and called for redemption:		
In 1945, 1,124 shares; in 1944, 1,600 shares	14,612.00	20,775.00
Net settlement for renegotiation of war contracts for prior years:		
Year ended June 30, 1942....	22,331.16	.....
Year ended June 30, 1943....	.....	85,500.00
Year ended June 30, 1944 (less $10,500.00 charged to reserve provided therefor at June 30, 1944)	2,071.72	.....
Purchase of property, trademarks, and good will in South America including adjacent islands, the West Indies, Bahamas, and the island of Bermuda	.....	33,000.00
Total surplus charges.....	39,014.88	139,275.00

Surplus for Year Before Dividends	132,311.58	127,192.98
Less Dividends Declared During Year:		
In 1945, preference dividends, $1,843.46, and common dividends, $103,364.10; in 1944, preference dividends, $3,650.40, and common dividends, $108,286.20	105,207.56	111,936.60
Net Surplus for Year	27,104.02	15,256.38
Plus Surplus at Beginning of Year	689,222.02	673,965.64
Surplus at End of Year	$716,326.04	$689,222.02
Note: No provision has been made for possible refund of profits for the year ended June 30, 1945 under the requirements of the Renegotiation Act of 1943. It is not believed that any refund will be required.		
Earnings Per Share on Common Stock	$1.72	$1.65
Number of Shares of Common Stock at End of Year	98,442	98,442
Number of Shares of Preference Stock at End of Year	None	1,124

Certificate of Auditors

To the Board of Directors,
Holophane Company, Inc.

We have examined the balance sheet of Holophane Company, Inc. as of June 30, 1945 and the statements of income and surplus for the year then ended, have reviewed the system of internal control and the accounting procedures of the company and, without making a detailed audit of the transactions, have examined or tested account-

ing records of the company and other supporting evidence, by methods and to the extent we deemed appropriate.

In our opinion, the accompanying balance sheet and related statements of income and surplus present fairly the position of Holophane Company, Inc. at June 30, 1945 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

New York, N. Y., July 27, 1945.

[fol. 506e] Holophane Company, Inc.

342 Madison Avenue, New York 17, N. Y.

Notice of Annual Meeting of Stockholders

You are hereby notified that the Annual Meeting of the Stockholders of Holophane Company, Inc., will be held at the office of the company, 342 Madison Avenue, New York, N. Y. at 10:00 A.M. on Thursday, October 18, 1945.

(a) for the election of directors;

(b) for the purpose of amending the Certificate of Incorporation and By-Laws to delete therefrom all provisions relating to the preference stock of the company, all such preference stock having been redeemed on or before March 15, 1945:

(c) for the purpose of authorizing and ratifying the execution and filing of any documents necessary to effectuate such change and to take any and all other steps necessary in connection with such action, and

(d) for the transaction of such other business as may come before the meeting.

For the purpose of the meeting the stock transfer books were closed at the close of business on September 28, 1945, twenty (20) days in advance of such meeting as provided in Section 2, Article I, of the By-Laws and will be re-opened on the morning of October 19, 1945.

For the purpose of securing a quorum, if you are unable to attend the meeting, we suggest that you affix your signa-

ture to the enclosed proxy and return it to us in the enclosed envelope.

This proxy is solicited by and in behalf of the management, it is intended that the proxy holders named therein and who were selected by the Board of Directors, will vote for the re-election of Directors then in office.

Respectfully, A. L. Rustin, Secretary.

New York, N. Y.

September 28, 1945.

[fol. 507] DEFENDANT'S EXHIBIT 102

Holophane Company, Inc.

(Illumination Service)

Annual Report

Year Ended June 30, 1946

[fol. 507a] Holophane Company, Inc.

Officers: Charles Franck, President; A. D. Cameron, Vice-President; Thomas W. Rolph, Vice-President; Joel B. Liberman, Vice-President and Treasurer; A. L. Rustin, Secretary.

Directors: Charles Franck, Joel B. Liberman, A. D. Cameron, H. M. Kiesewetter, John G. Jackson, Stuart R. Reed.

Executive Offices: 342 Madison Avenue
New York 17, N. Y.

Factory: Newark, Ohio

The Holophane Company, Limited
385 Yonge Street, Toronto, Ontario, Canada

Independent Auditors

Peat, Marwick, Mitchell & Co.
70 Pine Street, New York 5, N. Y.

[fol. 507b] To the Stockholders, Holophane Company, Inc.

Submitted herewith is a balance sheet as of June 30, 1946, the end of our fiscal year, and condensed statement of income and surplus for the years ended June 30, 1946

and June 30, 1945. At a Directors' Meeting held August 8, 1946, a dividend of Forty cents ($.40) was declared payable today to stockholders of record August 15, 1946, out of earnings during the past fiscal year. A check is enclosed herewith in payment of this dividend.

At a Directors' Meeting held March 25, 1946, the writer was elected Chairman of the Board of Directors, having resigned as President of your Company, a position which he held since 1928. For a period exceeding ten years prior to that year he served, first as Manager, then as General Manager and Vice-President. At this same Directors' Meeting, Mr. Thomas W. Rolph was elected as the President. Mr. Rolph has been associated with our Company for nearly twenty-five years, and previous to this election, he acted as our Vice-President and Chief Engineer.

The fiscal year just concluded discloses a substantial increase in business, and likewise, a gratifying increase in net earnings. The backlog on unfilled orders at this date is as high as it ever has been in the history of the Company, and the prospects for future business remain very encouraging. One of the reasons for the high backlog is due to delayed shipments of metal fixtures, particularly for our new line of fluorescent units with Holophane Controlenses, known under the trademark Holoflux. However, subject to unforeseen conditions lying beyond our control, we have every reason to hope that by the end of this year, a large portion of the orders on which shipment has been delayed, will have been delivered. In previous reports, we pointed out that we did not face any serious reconversion problems and that has proven correct up to the present. On the other hand we have felt the necessity of increasing our warehouse facilities and probably will also provide for additional buildings to take care of the enlarged scope of our regular production. None of these items, however, involve any considerable outlay of money.

During the year concluded, an agreement has been reached with the United States Government agencies involved, in respect of renegotiation of war contracts for the year ended June 30, 1945 and no refund of profits will be required; also that sales to such agencies during the current year did not reach the minimum amount subject to renegotiation.

During the last week of June 1946, a general sales conference at our Newark, Ohio, factory was held and we are happy to report that the various department heads of our Company are loyal and interested in the welfare of the Company. These men in charge of the various departments, together with the forces in the field and at headquarters, and our employees in the plant at Newark, Ohio, form a closely knit organization which has matured to a most satisfactory degree, and enable us to look forward with confidence in the face of the generally unsettled economic situation.

Since my last report, Messrs. A. D. Cameron, John G. Jackson, and Stuart R. Reed have resigned as Directors of your Company, and Mr. Howard J. Tait, who has been the Works Manager of the Company for many years has been elected to the Board.

The profit results shown from our Canadian business are reflected in the condensed statement of income and surplus, and after careful investigation of the intolerable warehouse and general conditions at the Canadian headquarters, the Canadian Board of Directors decided to proceed with the construction of a building 100 foot square, in the outskirts of Toronto, which will serve as a nucleus of a plant and office headquarters. The new building, the cost of which is estimated to be around $60,000, will not result in any substantial increase of expenses, as it will eliminate the rental fees we have had to pay for our Toronto office on Yonge Street, where we have been located for close to twenty years.

The writer also resigned as President of the Canadian Company, and was elected to the Chairmanship of the Board of that Company, and our trusted Manager, Mr. Frank T. Groome, who has been associated with the Holophane Canadian business for over twenty-five years, was elected as its new President. The Canadian Company, as you know, is a wholly-owned subsidiary of the American Company.

Our other subsidiary, Verlys of America, Inc., also shows a continued upward trend in turn-over and earnings; its further enlargement is, however, limited by our manufacturing capacity. We have plans under way whereby

we hope to double the business volume of Verlys within the next two years.

We enclose with this report a pamphlet entitled "Holophane offers Illumineering," which we recommend for your perusal, and we bespeak your personal support on behalf of our products whenever such opportunity might arise.

Our Management-Labor relations continue to be reasonably satisfactory. It is hoped that our factory employees realize that only through wholehearted cooperation between labor and management, can a manufacturing organization continue to operate successfully. From the Management's standpoint, everything reasonably possible will be done to keep such a spirit alive.

At this opportunity, the writer again would like to express his personal appreciation of the loyal cooperation on the part of the officers, and employees of the Company. On behalf of the Board, he acknowledges and thanks our stockholders for their continued interest.

Respectfully submitted, Charles Franck, Chairman of the Board of Directors.

New York, N. Y., August 29, 1946.

[fol. 507c] Holophane Company, Inc.

Balance Sheet As Of June 30, 1946

Assets

Current Assets:		
Cash		$197,178.96
Marketable securities—at cost (quoted market value, $184,361)		183,389.91
Accounts receivable:		
Trade, less reserve for doubtful accounts, $2,000.00	$158,312.42	
Other	5,606.03	163,918.45
Accrued interest receivable		1,489.44
Inventories—at not more than the lower of cost or market		226,082.36
Total Current Assets		$772,059.12

Investment in and Advances to Subsidiary Companies (at book values, determined from books of subsidiaries):		
The Holophane Company, Limited	134,077.70	
Verlys of America, Inc.	27,500.01	161,577.71
Plant Property:		
Land and buildings—at cost	402,562.16	
Machinery, equipment, etc.—at cost	255,275.85	
Molds—at fixed value	70,000.00	
	727,838.01	
Less Reserve for depreciation	343,223.03	384,614.98
Patents:		
Cost	59,228.11	
Less Reserve for amortization	32,383.79	26,844.32
Deferred Charges:		
Unexpired insurance premiums	6,558.40	
Other	7,125.86	13,684.26
		$1,358,780.39

Liabilities

Current Liabilities:		
Trade accounts payable and accrued expenses (including compensation due to officers and employees)		$193,786.57
Accrued Federal income and excess profits taxes		194,759.61
Accrued taxes—other		7,874.04
Total Current Liabilities		396,420.22
Capital Stock and Surplus:		
Capital stock:		
Authorized 105,000 shares without par value. Issued and outstanding, 98,442 shares—at stated value of $1.00 per share	$ 98,442.00	
Surplus	863,918.17	962,360.17
		$1,358,780.39

[fol. 507d] Holophane Company, Inc.

Condensed Statement of Income and Surplus, Years Ended June 30, 1946 and June 30, 1945

	1946	1945
Profit from Operations	$400,454.62	$290,496.64
Plus Income Credits:		
Net income of subsidiaries (after provision for taxes on income and profits), interest from bonds, etc.	85,223.56	41,071.82
Gross Income	485,678.18	331,568.46
Less Income Charges:		
Cash discount on sales, etc.	15,843.22	9,380.42
Net Income for Year Before Federal Taxes on Income and Profits	469,834.96	322,188.04
Less Federal Taxes on Income and Profits	194,268.23	150,861.58
Net Income for the Year After Federal Taxes on Income and Profits	275,566.73	171,326.46
Less Surplus Charges:		
Premium on 1,124 preference shares purchased and called for redemption	.....	14,612.00
Net settlement for renegotiation of war contracts for prior years:		
Year ended June 30, 1942	.....	22,331.10
Year ended June 30, 1944 (less $10,500.00 charge to reserve provided therefore at June 30, 1944)	.....	2,071.78
Total surplus charges	.....	39,014.88

Surplus for Year Before Dividends	275,566.73	132,311.58
Less Dividends Declared During Year:		
In 1946, common dividends, $127,974.60; In 1945, preference dividend, $1,843.46; and common dividends, $103,364.10	127,974.60	105,207.56
Net Surplus for Year	147,592.13	27,104.02
Plus Surplus at Beginning of Year	716,326.04	689,222.02
Surplus at End of Year	$863,918.17	$716,326.04
Earnings per Share on Common Stock	$2.80	$1.72
Number of Shares of Common Stock at End of Year	98,442	98,442

Certificate of Auditors

To the Board of Directors,
Holophane Company, Inc.

We have examined the balance sheet of Holophane Company, Inc. as of June 30, 1946 and the statements of income and surplus for the year then ended, have reviewed the system of internal control and the accounting procedures of the company and, without making a detailed audit of the transactions, have examined or tested accounting records of the company and other supporting evidence, by methods and to the extent we deemed appropriate.

In our opinion, the accompanying balance sheet and related statements of income and surplus present fairly the position of Holophane Company, Inc. at June 30, 1946 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

New York, N. Y., August 5, 1946.

[fol. 507e] Please Send In Your Vote

It is urgently requested that you fill in, date and sign the enclosed proxy and return it promptly. This will save your company the expense of follow-up letters, telephone calls, etc.

Holophane Company, Inc., A. L. Rustin, Secretary.

[fol. 508] GOVERNMENT'S EXHIBIT 103

Holophane Company, Inc. (Illumination Service)

Annual Report

Year Ended June 30, 1947

[fol. 508a] Holophane Company, Inc.

Officers: Charles Franck, Chairman of the Board of Directors; Thomas W. Rolph, President; Edward Ponkop, Treasurer; A. L. Rustin, Secretary.

Directors: Charles Franck, Thomas W. Rolph, Davis H. Tuck, H. M. Kiesewetter, Howard J. Tait.

Executice Offices
342 Madison Avenue, New York 17, N. Y.

Factory
Newark, Ohio

The Holophane Company, Limited
Toronto, Ontario, Canada

Accountants and Auditors

Peat, Marwick, Mitchell & Co.
70 Pine Street, New York 5, N. Y.

[fol. 508b] To the Stockholders,
Holophane Company, Inc.

Submitted herewith is the balance sheet as of June 30, 1947, the end of our fiscal year, and condensed statement of income and surplus for the years ended June 30, 1947 and June 30, 1946.

At a Directors' Meeting held September 16, 1947, a dividend of Fifty cents ($.50) per share was declared payable today to stockholders of record September 19, 1947. A check has been mailed under separate cover in payment of this dividend.

The Board of Directors on August 14, 1947 authorized a reserve of $60,000 towards improvements considered necessary for increasing security and warehouse facilities at our Newark, Ohio factory. The principal items consist of a separate warehouse for storage of shipping cartons and similar material, a sprinkler system for the factory which will considerably lower our cost of fire insurance premiums, and further increased electrical power facilities.

At a Directors' meeting held May 22, 1947, Mr. Joel B. Liberman advised the Board of his decision to retire from general practice. He resigned as Director and Vice-President and Treasurer of the Company as of that date after more than thirty years of close affiliation with Holophane as legal adviser and patent attorney, in addition to his duties as an Officer and Director. His decision was reluctantly accepted by the Board but he agreed to act as legal consultant for the Company.

On behalf of the Board and his many friends, I feel confident that I express our true sentiments in wishing him many years of good health and happiness.

Mr. Davis H. Tuck, our Chief Electrical Engineer, with thirty years fine record, was elected as Director in Mr. Liberman's place.

Mr. Edward Ponkop, Certified Public Accountant (New York), formerly associated with Messrs. Peat, Marwick, Mitchell & Company, our independent accountants and auditors, associated with us for three years, and holding the position of Assistant Treasurer was appointed as Treasurer in place of Mr. Liberman. Prior to his association with us, Mr. Ponkop was in charge of our independent audits since 1936.

Again the fiscal year concluded disclosed substantially increased earnings over those of the preceding year. The present backlog of orders is still considerable, although less by approximately 30% from the peak. New business continues at a satisfactory though lesser volume than in

previous periods. This, however, allows us to catch up on our substantial backlog on Holophane glass products. The critical situation of delivery on metal fixtures occasioned primarily through shortage of raw materials has been considerably eased.

While the cost of raw materials and wages has continued to move upward, we were able to hold a general price increase to the minimum of only approximately 10%, and although further wage increases were negotiated and put into effect the latter part of August, we will exert all efforts to avoid any further price increase by economical manufacturing through improved machinery and continuance of incentive plans.

It was gratifying to notice recently increased production in factory operations and the Management will continue to maintain and cement good relations with our factory employees.

The new plant and office building of our wholly-owned Canadian subsidiary, reported upon in the previous report, has been completed and is now in operation. The earnings of this subsidiary for the past fiscal year disclosed most encouraging results.

Our other subsidiary, Verlys of America, Inc., continues to find ready acceptance of its products by its nationally located customers, be they department stores, outstanding jewelry or fine gift shops.

Our Mexican business continues to grow satisfactorily, but at present is limited by import restrictions. The market possibilities in other South American Republics, particularly Argentina and Brazil are closely watched by us. However, before entering these markets aggressively, we prefer to await further clarification of political and economic problems existing in most of the Latin American Republics.

May I bespeak once more the cooperation of our stockholders whenever they have an opportunity to hear of illumination requirements, in which field we fully believe that our position of leadership has remained intact.

In 1948, our Company will celebrate its Golden Anniversary in the field of applied illuminating engineering.

For the past three years, the writer has been particu-

larly interested in a general pension plan. Your Board feels the time has come, to submit such a plan for the approval of our stockhelders at the annual meeting to be held October 16, 1947. Further details are contained in the regular notice for the stockholders meeting, and we sincerely hope in the interest of your Company that our plan will be wholeheartedly approved.

The Management once more wishes to thank all officers and employees for their continued cooperation and to acknowledge and thank our stockholders for their continued support.

Respectfully submitted, Charles Franck, Chairman of the Board of Directors.

New York, N. Y., September 26, 1947.

[fol. 508c] Holophane Company, Inc.

Balance Sheet As Of June 30, 1947

Assets

Current Assets:		
Cash		$ 432,257.05
Marketable securities—at cost (quoted market value, $206,-051)		206,927.41
Accounts receivable:		
Trade, less reserve for doubtful accounts, $2,000.00	$229,530.03	
Other	8,695.75	238,225.78
Accrued interest receivable		1,572.36
Inventories—at the lower of cost or market		342,674.81
Total Current Assets		$1,221,657.41
Investment in and Advances to Subsidiary Companies (at book values, determined from books of subsidiaries):		
The Holophane Company, Limited	157,339.49	
Verlys of America, Inc.	27,288.89	184,628.38

Plant Property:		
Land and buildings—at cost...	447,913.90	
Machinery, equipment, etc.—at cost	288,098.91	
Molds—at fixed value.....	70,000.00	
	806,012.81	
Less Reserve for depreciation..	372,654.37	433,358.44
Patents:		
Cost	58,618.05	
Less Reserve for amortization..	30,489.05	28,129.00
Deferred Charges:		
Unexpired insurance premiums..	10,639.80	
Other	7,845.82	18,485.62
		$1,886,258.85

Liabilities

Current Liabilities:		
Trade accounts payable and accrued expenses (including compensation due to officers and employees)		$ 213,237.74
Dividend payable July 1, 1947..		98,442.00
Accrued Federal income and excess profits taxes.....		300,782.85
Accrued taxes—other		12,695.92
Total Current Liabilities...		625,158.51
Capital Stock and Surplus:		
Capital stock:		
Authorized, 105,000 shares without par value. Issued and outstanding, 98,442 shares—at stated value of $1.00 per share .....$	98,442.00	
Surplus	1,162,658.34	1,261,100.34
		$1,886,258.85

[fol. 508d] Holophane Company, Inc.

Condensed Statement of Income and Surplus, Years Ended June 30, 1947 and June 30, 1946

	Year Ended June 30, 1947	June 30, 1946
Profit from Operations.....	$ 776,041.31	$400,454.62
Plus Income Credits:		
Net income of subsidiaries (after provision for taxes on income and profits), interest from bonds, etc.	103,880.77	85,223.56
Gross Income	879,922.08	485,678.18
Less Income Charges:		
Cash discount on sales, etc...	25,232.71	15,843.22
Net Income for Year Before Federal Taxes on Income and Profits	854,689.37	469,834.96
Less Federal Taxes on Income and Profits	300,000.00	194,268.23
Net Income for Year After Federal Taxes on Income and Profits	554,689.37	275,566.73
Less Dividends Declared During Year	255,949.20	127,974.60
Surplus for Year.....	298,740.17	147,592.13
Plus Surplus at Beginning of Year	863,918.17	716,326.04
Surplus at End of Year.....	$1,162,658.34	$863,918.17
Earnings Per Share on Outstanding Stock	$5.63	$2.80
Number of Shares of Outstanding Stock at End of Year.....	98,442	98,442

Certificate of Auditors

To the Board of Directors,
Holophane Company, Inc.

We have examined the balance sheet of Holophane Company, Inc. as of June 30, 1947 and the statement of income and surplus for the year then ended, have reviewed the system of internal control and the accounting procedures of the company and, without making a detailed audit of the transactions, have examined or tested accounting records of the company and other supporting evidence, by methods and to the extent we deemed appropriate.

In our opinion, the accompanying balance sheet and related statement of income and surplus present fairly the position of Holophane Company, Inc. at June 30, 1947 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

New York, N. Y., August 11, 1947.

[fol. 508e] Holophane Company, Inc.

342 Madison Avenue, New York 17, N. Y.

Notice of Annual Meeting of Stockholders

You are hereby notified that the Annual Meeting of the Stockholders of Holophane Company, Inc., will be held at the Office of the Company, 342 Madison Avenue, New York 17, New York, on Thursday, October 16, 1947 at 10:00 A.M.

(a) for the election of directors;

(b) to consider a recommendation to the Stockholders that they ratify existing employment contracts recommended by the Board of Directors.

(c) to consider a recommendation of the Directors concerning a Pension Plan for all company employees within certain limits of age and service.

(d) to ratify contracts for Plant improvements.

(e) to transact such other and further business as may properly come before said meeting.

For the purpose of the meeting the stock transfer books will be closed at the close of business on September 26, 1947, twenty (20) days in advance of such meeting as provided in Section 2, Article 1, of the By-Laws and will be re-opened on the morning of October 17, 1947.

For the purpose of securing a quorum, if you are unable to attend the meeting we would ask that you affix your signature to the enclosed proxy and return it to us in the enclosed envelope.

The proxy is solicited by and in behalf of the management, it is intended that the proxy holders named therein and who were selected by the Board of Directors will vote for the re-election of directors now in office, viz. Charles Franck; Thomas W. Rolph; Helmuth M. Kiesewetter; Davis H. Tuck and Howard J. Tait.

Respectfully, A. L. Rustin, Secretary.

New York, N. Y., September 26, 1947.

[fol. 509] GOVERNMENT'S EXHIBIT 104

Holophane Company, Inc. (Illumination Service)
Annual Report

Year Ended June 30, 1949

[fol. 509a] Holophane Company, Inc.

Officers: Charles Franck, Chairman of the Board of Directors and President; C. C. Keller, Vice-President in charge of sales; S. R. Williams, Vice-President in charge of Street Lighting; Kurt Franck, Vice-President in charge of Engineering; Edward Ponkop, Treasurer; A. L. Rustin, Secretary.

Directors: Charles Franck, H. M. Kiesewetter, Howard J. Tait, Davis H. Tuck, Henry L. Logan.

Executive Offices

342 Madison Avenue, New York 17, N. Y.

Factory
Newark, Ohio

The Holophane Company, Limited
Toronto, Ontario, Canada

Accountants and Auditors

Peat, Marwick, Mitchell & Co.
70 Pine Street, New York 5, N. Y.

[fol. 509b] To the Stockholders,
Holophane Company, Inc.

Submitted herewith is the balance sheet as of June 30, 1949, the end of our fiscal year, and condensed statement of income and surplus for the years ended June 30, 1949 and June 30, 1948.

At a Directors' Meeting held September 15, 1949, a dividend of Fifty Cents ($.50) per share was declared payable today to stockholders of record September 22, 1949. A check has been mailed under separate cover in payment of this dividend. This is the initial dividend paid out of the new fiscal year's earnings beginning July

1, 1949. The dividends, Fifty Cents ($.50) per share each, disbursed on July 28, 1949 and August 29, 1949 were paid out of earnings for the fiscal year ended June 30, 1949.

The Board of Directors on July 7, 1949 authorized a reserve of $60,000.00 out of the earnings for the fiscal year ended June 30, 1949 toward improvements under consideration for the bettering and increasing of our glass production.

The fiscal year just concluded again showed increased earnings over the preceding years. The present backlog of orders, while less than a year ago, remains at a satisfactory level. New business continues at a steady rate, although less in volume than last year, permitting us to improve our deliveries generally.

Our production cost continues to move upward, but we will exert every effort to avoid any further price increase by economical manufacturing through further improved machinery and plant facilities.

During June 1949 we held a General Sales Conference, and we are glad to report that our District Engineers showed their usual enthusiasm and interest in the success of the Company, and we are hopeful that in spite of the generally unstable economic conditions the results of our operations will continue to be satisfactory.

As indicated in last year's report, the new batch feeding plant has been completed and was put into operation in the early part of this year. It represents a capital expenditure of approximately $75,000.00 and has shown after some six months' operation a savings in mixing and handling of materials at the rate of $7,000.00 per year for an average year's production. In addition to this direct saving, we have found more accurate weighing and better mixing to have resulted in a definite improvement in the quality of our glass.

The Government on November 12, 1948 brought action against us under what is commonly known as the Sherman Anti-Trust Act. This action refers to our Street Lighting business, and in this suit are named as co-defendants among others, General Electric Company, Westinghouse Electric Corporation, and Line Material Company. The matter is currently pending, but the Company feels very

confident, as advised by its counsel, that its actions past and present are in conformity with the law.

Our wholly-owned Canadian subsidiary continued to increase its turnover and earnings over the preceding years. Our other subsidiary, Veryls of America, Inc., selling luxury glassware, showed slightly less earnings over those of the previous year.

The writer once more expresses his personal appreciation of the loyal cooperation on the part of the officers and employees of the Company, and on behalf of the Board he acknowledges and thanks our stockholders for their continued interest.

Respectfully submitted, Charles Franck, President.

New York, N. Y., September 30, 1949.

[fol. 509c] Holophane Company, Inc.

Balance Sheet as of June 30, 1949

Assets

Current Assets:		
Cash		$ 413,777.54
Marketable securities—at cost (quoted market value $705,108)		711,222.41
Accounts receivable:		
Trade, less reserve for doubtful accounts $2,000.00	$ 209,709.32	
Other	16,231.78	225,941.10
Inventories—at the lower of cost or market		267,120.25
Total Current Assets		1,618,061.30
Investment in and Advances to Subsidiary Companies (at book values, determined from books of subsidiaries):		
The Holophane Company, Limited	271,338.01	
Verlys of America, Inc.	31,828.67	303,166.68

Plant Property:		
Land and buildings—at cost..	547,509.93	
Machinery, equipment, etc.—at cost	348,305.00	
Molds—at fixed value.....	70,000.00	
	965,814.93	
Less Depreciation to date...	437,434.99	528,379.94
Patents:		
Cost	56,060.28	
Less Amortization to date...	25,745.27	30,315.01
Deferred Charges:		
Unexpired insurance premiums	10,214.53	
Other	5,363.26	15,577.79
		$2,495,500.72

Liabilities

Current Liabilities:		
Trade accounts payable and accrued expenses (including compensation due to officers and employees)		$ 169,659.88
Accrued Federal income taxes		376,898.39
Accrued taxes—other		15,201.93
Past service liability on employees' pension plan, net of estimated income tax savings		74,427.11
Total Current Liabilities		636,187.31
Capital Stock and Surplus:		
Capital stock:		
Authorized, 105,000 shares without par value. Issued and outstanding, 94,442 shares—at stated value of $1.00 per share..$	94,442.00	
Surplus	1,764,871.41	1,859,313.41
		$2,495,500.72

[fols. 509d-532] Holophane Company, Inc.

Condensed Statement of Income and Surplus, Years Ended June 30, 1949 and June 30, 1948

	Year Ended June 30, 1949	June 30, 1948
Profit from Operations	$1,004,487.36	$1,098,070.01
Plus Income Credits:		
Net income of subsidiaries (after provision for taxes on income and profits), interest from bonds, etc.	145,555.74	126,418.08
Gross Income	1,150,043.10	1,224,488.09
Less Income Charges:		
Pension plan premiums	20,379.63	109,988.84
Cash discount on sales, etc.	31,649.33	30,581.32
	52,028.96	140,570.16
Net Income for Year Before Federal Taxes on Income	1,098,014.14	1,083,917.93
Less Taxes on Income	377,600.00	410,500.00
Net Income for Year After Taxes on Income	720,414.14	673,417.93
Surplus Charges:		
Excess of cost over stated value of 4,000 shares of capital stock purchased for retirement	.....	108,400.00
Write-down of land from appraised value to cost	.....	18,125.00
Dividends declared during year	354,157.50	310,936.50
	354,157.50	437,461.50
Surplus for Year	366,256.64	235,956.43
Plus Surplus at Beginning of Year	1,398,614.77	1,162,658.34
Surplus at End of Year	$1,764,871.41	$1,398,614.77

Earnings Per Share on Outstanding Stock	$7.63	$7.13
Number of Shares of Outstanding Stock at End of Year....	94,442	94,442

Certificate of Auditors

To the Board of Directors,
Holophane Company, Inc.

We have examined the balance sheet of Holophane Company, Inc. as of June 30, 1949 and the related statement of income and surplus for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and statement of income and surplus present fairly the financial position of Holophane Company, Inc. at June 30, 1949 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

New York, N. Y., August 23, 1949.

Defendant's Exhibit 3

IGHTING WITH

Flur-o-guide

- **LENS PANELS**
  FOR FLUORESCENT LIGHTING
- **LENSLITES**
  FOR INCANDESCENT LIGHTING

ITING DIVISION · CORNING GLASS WORKS · CORNING, NEW YORK

CORNING ENGINEERED LIGHTING WARE

*FLUR-O-GUIDES... LENSES AND PANELS, ENGINEERED TO GUIDE FLUORESCENT LIGHT TO THE AREAS WHERE IT'S NEEDED ...WITHOUT EYE FATIGUE

ON *FLUR-O-GUIDE LENSES & PANELS

Corning Lenses s

MOST architects and lighting engineers agree that direct lighting is one of the most practical methods of securing the seventy-five to one-hundred foot-candles needed for today's better lighting. To meet these lighting needs, Corning Glass Works has developed a complete line of lenses for both incandescent and fluorescent lamps.

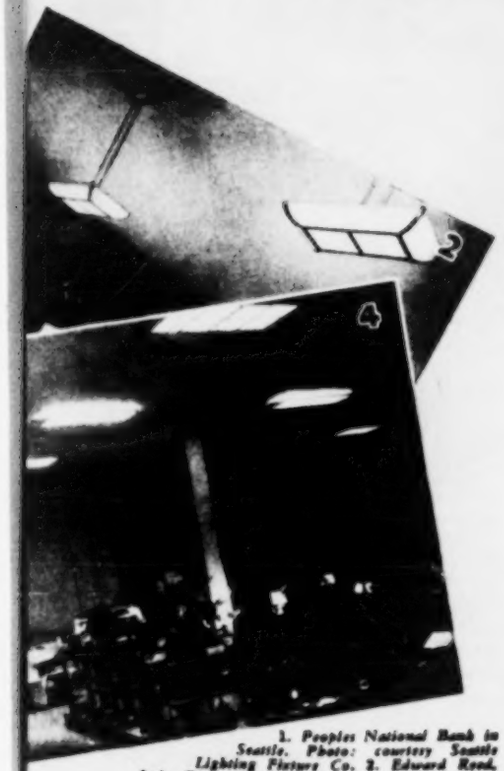
LENSLITES—For Incandescent Lamps

When you want directional lighting with incandescent

LENS P

When you w
use LENS P
the light an
made in le
widths for w
WAFFLE PAN
ing which p

send the light where it is most needed!



1. Peoples National Bank in Seattle. Photo: courtesy Seattle Lighting Fixture Co. 2. Edward Read, Ltd., Radio City, N. Y. Photo: courtesy Century Lighting Co., N. Y. 3. Gallery "A", Carnegie Institute, Pittsburgh, Pa. Photo: courtesy Westinghouse Electric and Manufacturing Co. 4. St. Joseph Ry., Lt., Ht. and Pr. Co. Photo: courtesy Benson Manufacturing Co., Kansas City, Mo.

PANELS—For Fluorescent Lamps

want directional lighting with fluorescent lamps, PANELS or WAFFLE PANELS. They concentrate and send it to the work area. These panels are lengths for standard fluorescent lamps and in various lighting jobs. The maximum size of the NELS is 24" x 48". A special feature is the groov- permits them to be cut into smaller sizes.

MODERN LIGHTING

COLOUVERED LENSLITES*—Round

Standard Colors, PYREX BRAND: Platinum, Ivory or White. CORNING BRAND: Ivory, White, Rose, Platinum, Fluorescent White or Daylight.

Code No.	Size	Light Distribution
54276	6-⅝" diam.	Wide Angle
54274	8-⅝" diam.	Wide Angle
54272	11-¾" diam.	Wide Angle
54250	13-⅝" diam.	Wide Angle

COLOUVERED LENSLITES*—Square

Standard Colors, PYREX BRAND: Platinum, Ivory or White. CORNING BRAND: Ivory, White, Rose, Platinum, Fluorescent White or Daylight.

Code No.	Size	Light Distribution
54268	6½" Square	Concentrating
54267	8" Square	Wide Angle
54266	8" Square	Concentrating
54265	12" Square	Wide Angle
54264	12" Square	Concentrating

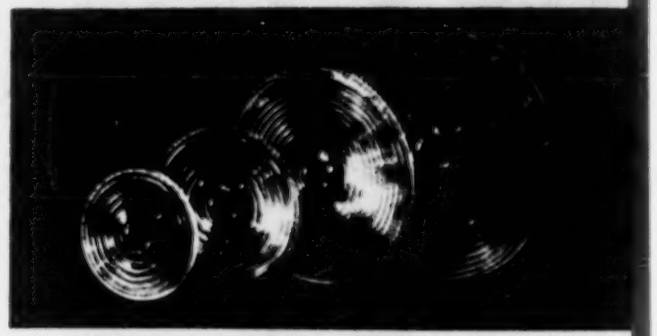
LENS PANELS

Code No.	Size	Suggested Fluorescent Lamp
90811	8¼" x 18"	1 or 2 15W
90811	8¼" x 24"	1 or 2 20W
90811	8¼" x 36"	1 65W
90811	8¼" x 48"	1 or 2 40W
90814	8½" x 18"	1 or 2 15W
90813	8½" x 24"	1 or 2 20W
90815	8½" x 36"	1 or 2 30W
90816	8½" x 48"	1 or 2 40W
90817	8½" x 60"	1 100W
90818	11" x 24"	1 or 2 40W

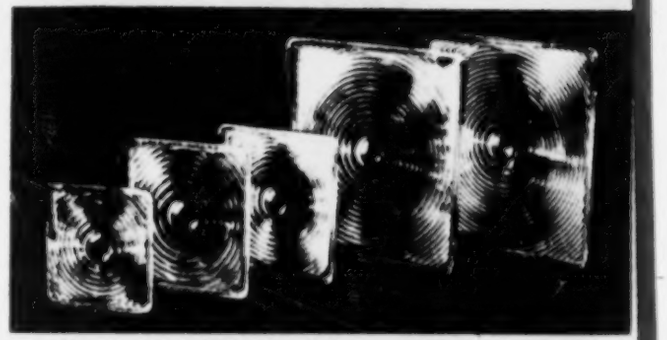
WAFFLE PANELS

90812 Lens Panel 90825 Diffusing Panel

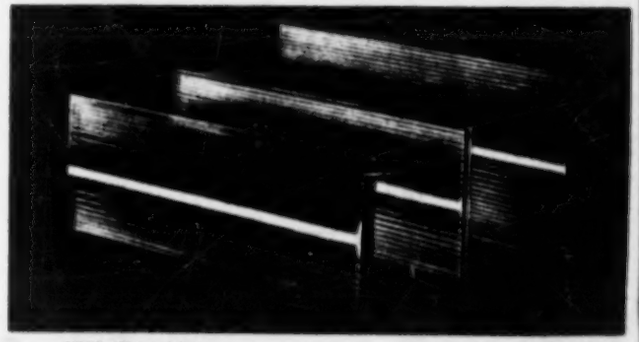
Code No.	Size	Suggested Fluorescent Lamps
90812	6" x 18"	1 - 15W
90812	6" x 24"	1 - 20W
90812	6" x 36"	1 - 65W
90812	6" x 48"	1 - 40W



54276 54274 54272 54250



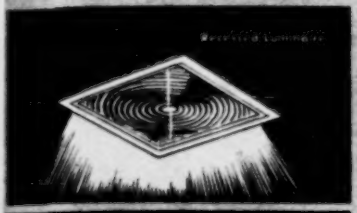
54268 54267 54266 54265 54264

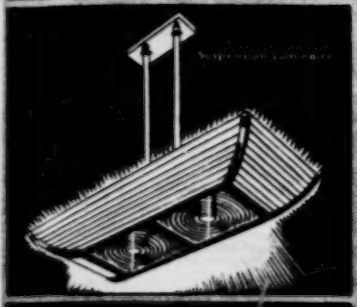


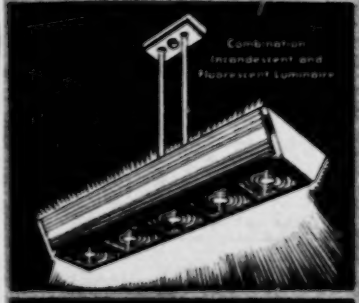
90811 (8¼" x 24") 90813 90818

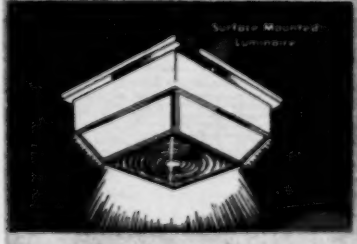
LD 1888
M1

For Direct Lighting—Use Lenses









SUGGESTED SPECIFICATIONS FOR COLOUVERED LENSLITES

The lens for the incandescent lamp shall be made of a *colorless crystal glass** and shall be plano-convex of the Fresnel type (sectored or corrugated) regrossed to a flat plane. The prisms shall be arranged symmetrically around the axis and shall be large in size, not more than six per inch, with the inactive areas of the prisms decorated with *Ivory*** colored ceramic pigment fired into the glass to obscure high angle brightnesses. The lens shall be approximately *twelve inches (18") square**** and shall produce a *wide angle***** distribution of light.

* In case of PYREX Brand Glass this should read a *boro-silicate heat resistant glass.*

** Instead of *Ivory*, the specified color may be *White, Rose, Flesh-tone, Fluorescent White*, or *Daylight*, for CORNING Brand *Colouvers*, and *Platinum* or *White* for PYREX Brand LENSLITES.

*** The size should be varied dependent upon LENSLITE needed.

**** This should read *concentrating* if that type of lens is wanted.

SUGGESTED SPECIFICATIONS FOR LENS PANELS FOR FLUORESCENT LAMP

The lens for the fluorescent lamp shall be made of a colorless crystal glass and shall be plano-convex of the Fresnel type (sectored or corrugated) regrossed to a flat plane. The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over six to the inch, to effect a more efficient light control. The rear surface of the lens shall have a slight sandblast surface-roughening so as to produce a slight diffusion. The lens, lamp and reflector shall be combined and assembled in the housing so as to essentially produce a *concentrating** light distribution.

*Or *wide angle* light distribution.

DISTRIBUTORS

CALIFORNIA

LOS ANGELES—C. W. Cole & Company · Commercial Reflector & Manufacturing Company · Wagner Woodruff Company.
SAN FRANCISCO—Boyd Lighting Fixture Company · Pacific Electric Company · Karl Von Hoehn.

CANADA

HAMILTON, ONTARIO—Canadian Westinghouse Company Ltd.
TORONTO, ONTARIO—Canada Metal Spinning Company.
VANCOUVER, B. C.—Fort Robinson & Bird.

COLORADO

DENVER—Albert Sechrist Manufacturing Company.

ILLINOIS

CHICAGO—Belson Manufacturing Company · Major Equipment Company · Mutual Metal Manufacturing Company · Solar Light Company.

MASSACHUSETTS

BOSTON—Life Control.

MICHIGAN

DETROIT—Kirlin Company.

MISSOURI

ST. LOUIS—Architectural Bronze Studios, Inc. · Gross Chandelier Company · Edwin F. Guth Company.
KANSAS CITY—Benson Manufacturing Company.

NEW YORK

BROOKLYN—A. Ward Hendrickson Company.
NEW YORK CITY—Mitchell Brothers · Edward F. Caldwell Company · Century Lighting Incorporated · Klingel Brothers · Lightolier Company · Pelouzing Instrument Sinnes Company · Kurt Versen.

OHIO

CLEVELAND—Art Metal Company · Westinghouse Electric & Manufacturing Company.

OREGON

PORTLAND—Baker Barbon Corporation.

PENNSYLVANIA

PHILADELPHIA—Klemm Reflector Company · Voight Manufacturing Company.
PITTSBURGH—Pittsburgh Reflector Company.

WASHINGTON

SEATTLE—Seattle Lighting Fixture Company.
SPOKANE—Columbia Electric & Manufacturing Company.

Complete equipment using CORNING LENSLITES or LENS PANELS can be had from the above distributors. Some of these firms have LENSLITES catalogued, others use these lenses in special lighting equipment.

Corning Flur-o-guides

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- SUPPLEMENTARY LIGHTING
- LOCALIZED LIGHTING

For Special Effects in

- COMMERCIAL INTERIOR LIGHTING

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- INDUSTRIAL PLANT LIGHTING

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Industrial Plants
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Laboratories
Private and General Offices
Electrical Instrument Panel Boards
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Lighting Division

CORNING GLASS WORKS

CORNING • NEW YORK

Form 8-T1-6-44

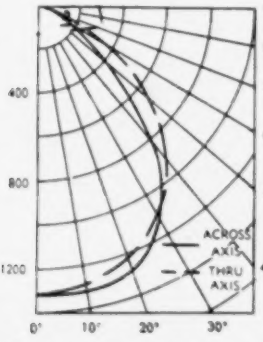
538

PHOTOMETRIC DATA SHEET

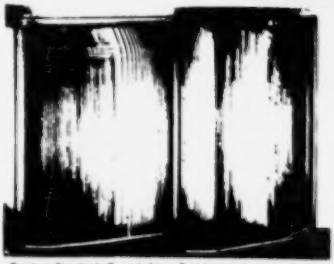
CORNING STANDARD CURVED LENS PANEL

CODES 541910 AND 541920

Recommended Application in Two Lamp Troffer



Two 40 watt 3500° lamps (4960 lumens), white Enamel Reflector, 80°; R.F., Corning Standard Curved Lens Panels, two code 541910 and two code 541930.



The Corning Standard Curved Lens Panels are formed of clear crystal lighting glassware with sharp, well defined prisms. They control fixture brightness in the side areas and concentrate the light into useful zones. Open end panels are twelve inches long so that long rows come out to the even foot, and closed end panels are 11½" long to allow for neutral at fixture ends.

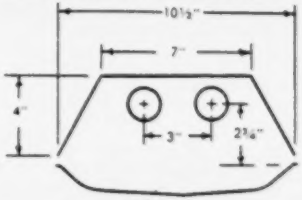


TABLE 1

ANGLE	CANDLEPOWER Across Axis	CANDLEPOWER Thru Axis	BRIGHTNESS (Foot-Lamberts)* AVERAGE Across Axis	BRIGHTNESS (Foot-Lamberts)* AVERAGE Thru Axis	BRIGHTNESS (Foot-Lamberts)* MAXIMUM Across Axis	BRIGHTNESS (Foot-Lamberts)* MAXIMUM Thru Axis
90° Horiz.	41	10	340	450		
85°	38	25	360	250		
75°	131	105	420	335		
70°					400	600
65°	300	274	410	560		
55°	335	550	530	875		
45°	636	813	830	1050	950	1180
35°	1017	1017	1130	1130		
25°	1202	1167	1215	1180		
15°	1312	1263	1240	1200		
5°	1312	1303	1200	1200		
0° Nadir	1312	1312	1200	1200		

For candles per square inch brightness, divide foot-lamberts by 452.

TABLE 2

LUMENS IN ZONES

Zone	Lumens	%	Zone	Lumens	%
0°-30°	1846	21.9	0°-90°	3950	61.4
0°-60°	3648	53.3	90°-180°	0	0

FIXTURE EFFICIENCY 61.4%

LIGHTING CALCULATIONS

This sheet contains complete information for calculating illumination levels using fixtures having characteristics similar to the one used in compiling this data. The procedure outlined on the reverse side will help you determine either the number of fixtures required to produce a desired level of illumination in a given instance, or the footcandles which will be produced by a number of fixtures you have selected. These fixtures may be mounted 1½ times the mounting height from the working plane for even illumination.

TABLE 3

Information on Curved Lens Panels Codes 541910 & 541930

LENGTH: 541910 — 12"
541920 — 11½"
LENGTH TOLERANCE: + 1/64", — 3/64"
WIDTH: 11" - 1/32"
FLANGE THICKNESS: 7/32"
WEIGHT: 541910 — 2¾ lb., 541920 — 3 lb.

SUGGESTED SPECIFICATIONS

The lens closure for the fluorescent lamps shall be of continuous curved lenses made of colorless crystal glass. It shall be of the Fresnel type with exterior linear prisms running lengthwise continuously to the lens flange. Prisms shall number not more than seven to the inch.

TABLE 4

CEILING		75%		30%	
WALLS		50%	30%	50%	30%
ROOM INDEX		COEFFICIENT OF UTILIZATION			
J	0.6	.34	.31	.33	.31
I	0.8	.41	.40	.39	.38
H	1.0	.43	.42	.43	.41
G	1.25	.47	.45	.46	.45
F	1.5	.49	.48	.47	.47
E	2.0	.52	.51	.51	.50
D	2.5	.55	.53	.53	.52
C	3.0	.56	.55	.55	.53
B	4.0	.57	.56	.56	.54
A	5.0	.58	.57	.57	.55

CALCULATIONS BY I.E.S. METHOD

LIGHTING SALES DEPARTMENT

CORNING GLASS WORKS

CORNING, NEW YORK

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538

The average illumination in a room may be easily calculated in several steps according to the following method

First determine the Room Index, either from the table published for this purpose, or from the following formula

$$\text{Room Index} = \frac{2 \times (\text{room width} \times \text{room length})}{6 \times \text{mounting height above work level}}$$

With the Room Index and the approximate wall and ceiling reflectances of the room, the nearest value for the coefficient of utilization may be determined from the table on reverse side of this page. The formula below may then be solved for illumination

$$\text{Illumination in footcandles} = \frac{\text{Coefficient of Utilization} \times \text{Total number of lamps in all fixtures} \times \text{Lumens per lamp}}{\text{Area of room (square feet)}}$$

In estimating the footcandles averaged over a period of service, it is necessary to apply a maintenance factor to the initial footcandles calculated with the formula above. Maintenance factor for units of this type under average conditions of cleaning, etc., is 0.7

Corning Process Shields for Fluorescent Lighting

Number 90962

Alba Diffusing Glass

Four Lamp (40W) Shield

Standard Carton 2 Pieces

Approx. Shipping Weight 37 Lbs. per Ctn.

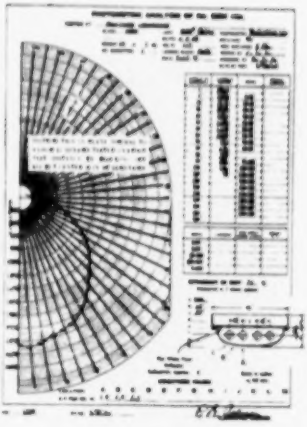
Warpage—Flange may vary 1/8" from plane surface

Weight of No. 90962 will not exceed 16¾ pounds

TEMPORARILY WITHDRAWN

Specification for Corning Process Shields

1. Glassware shall be designed for use with the standard 40 watt Mazda F Lamp and shall conform in contour, dimensions and tolerances to print herewith.
2. Glassware shall be made of a homogeneous translucent glass of medium diffusion and high transmission and shall possess a neutral tone.
3. All of the glassware shall be uniform in quality and free from such imperfections as stones, streaks, blisters, checks, etc., as will impair the strength or mar the appearance of the lighting unit. Glassware shall be resistant to weathering and must be properly annealed.
4. The weight of the glassware shall not exceed the following: No. 90960, seven pounds per piece; No. 90961, ten and one-quarter pounds per piece; No. 90962, sixteen and three-quarter pounds per piece.



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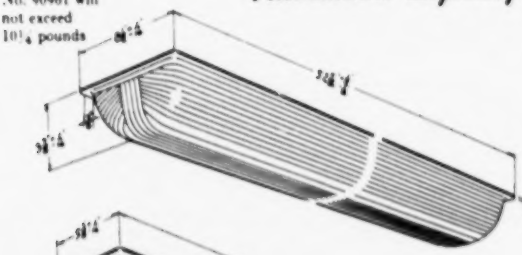
Corning Process Shields for Fluorescent Lighting

Weight of No. 90961 will not exceed 10¼ pounds



Number 90961

Alba Diffusing Glass

Two Lamp (40W) Shield

Standard Carton 3 Pieces

Approx. Shipping Weight 37 Lbs. per Ctn.

Warpage—Flange may vary 3/32" from plane surface

Weight of No. 90960 will not exceed 7 pounds

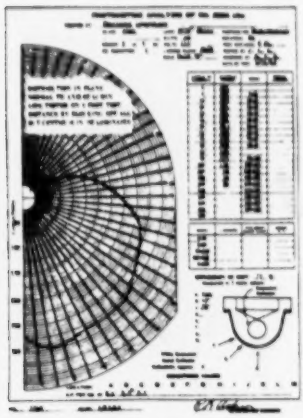
Number 90960

Alba Diffusing Glass

Single Lamp (40W) Shield

Standard Carton 6 Pieces

Approx. Shipping Weight 40 Lbs. per Ctn.



Warpage—Flange may vary 3/32" from plane surface

See Page 4-A for Specifications for Corning Process Shields

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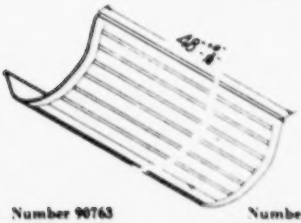
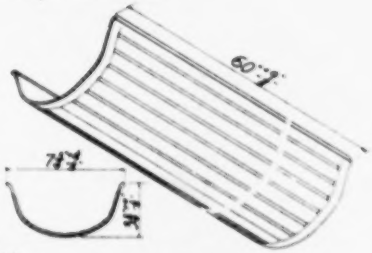
Fluorescent Lamp Shields



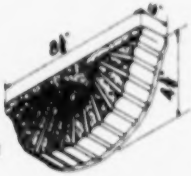
Number 90763
Alba Diffusing Glass
Standard Length 48"
For two—40 Watt Lamps
Standard Carton 4 Pieces
Approx. Shipping Weight 37 Lbs.
per Ctn.

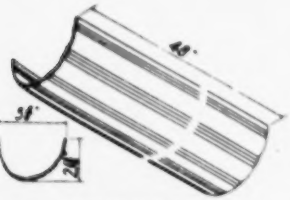


Number 90779
Alba Diffusing Glass
Standard Length 24"
(This is 24" length No. 90763)
For two—20 Watt Lamps
Standard Carton 4 Pieces
Approx. Shipping Weight 21 Lbs.
per Ctn.

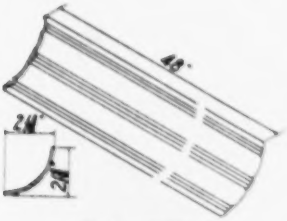
Number 90765
Alba Diffusing Glass
Standard length 60"
For one—100 Watt Lamp
Standard Carton 4 Pcs.
Approx. Shipping Weight
47 Lbs. per Ctn.

Number 90771
Alba Diffusing Glass
End cap for 90763 or 90765 Shields
Standard Carton 48 Pieces
Approx. Shipping Weight 66 Lbs. per Ctn.
The background of the end cap is stippled, radiating
ion and center rosette are plain.





Number 90052
Alba Diffusing Glass
Standard Length 48"
For one—40 Watt Lamp
Standard carton 6 Pcs.
Approx. Shipping Weight
37 Lbs. per Ctn.



Number 90053
Alba Diffusing Glass
Standard Length 48"
Side panel for 40 Watt
Lamp Luminaire.
Standard Carton 12 Pcs.
Approx. Shipping Weight
37 Lbs. per Ctn.

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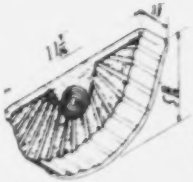
Fluorescent Lamp Shields

Number 90774

Alba Diffusing Glass
Standard Length 48"
For four—40 Watt Lamps
Standard Carton 2 Pieces
Approx. Shipping Weight 34 Lbs. per Ctn.

Number 90776

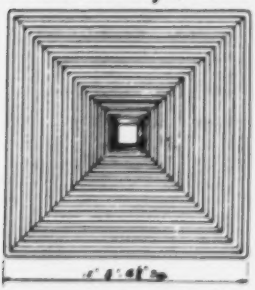
Alba Diffusing Glass
Standard Length 24"
For four—20 Watt Lamps
Standard Carton 4 Pieces
Approx. Shipping Weight 37 Lbs. per Ctn.



Number 90775

Alba Diffusing Glass
End Cap for 90774 or 90776 Shields
Standard Carton 24 Pieces
Approx. Shipping Weight 55 Lbs. per Ctn.
The background of the end cap is stippled, radiating flutes and center rosette are plain.

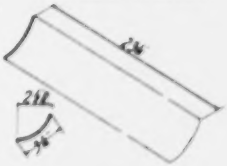
Illuminating Plates



No.	Side	Thickness	Std. Ctn. Pcs.	Approx. Ship. Wt.
90731	6½"	¼" Flange	24	22 Lbs.
90732	8"	¼" Flange	24	32 Lbs.
90733	12"	¼" Flange	12	30 Lbs.

Crystal Glass, Plain or with Matted Face—or Alba Glass

Side Panel



Number 90772

Monax Brand White Diffusing Glass
Standard Length 23-1/16"
Side Panel for 20 Watt or 40 Watt Lamp Luminaire
Standard Carton 48 Pieces
Approx. Shipping Weight 52 Lbs. per Carton

LIGHTING SALES DEPARTMENT, CORNING, N. Y.

B-65-R-6-42
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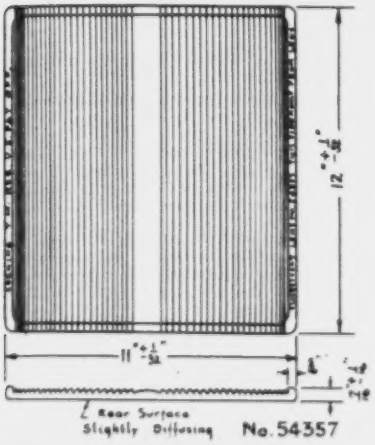
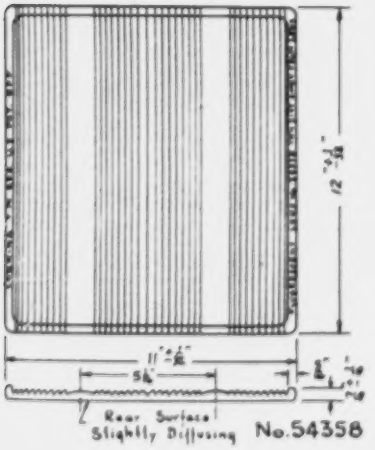
Fluorescent Lamp Lens Panel

Crystal Glass...Clear Face...Stippled Back





Although primarily intended for use in troffers fitting into acoustical tile ceilings, the lenses illustrated on this page will find wide use in surface mounted or suspension luminaires.

Since the lenses are twelve inches long, two lenses are required for a 20 watt lamp luminaire, four lenses for a 40 watt lamp luminaire and five lenses for a 100 watt lamp luminaire. The breaks between lens panels are largely obscured by the continuation of the prisms over the end flange.

The flange is the thickest part so the lenses can be stacked without danger of chipping the tops of the prisms.

No. 54357 Lens Panel (Illustrated at top of page) has the same optical design and duplicates the lighting performance of the No. 90818 lens panel illustrated on page 14. One or two fluorescent lamps can be used with this panel.

No. 54358 "TWINLENS" panel (Illustrated at bottom of page) has the same optical design and duplicates the lighting performance of the No. 90821 "TWINLENS" panel illustrated on page 8. Two, three or even four fluorescent lamps can be used with this panel (see Lighting Applications).

Ware will be packed in a standard carton of 12 pieces, having a shipping weight of approximately 39 pounds.

Please order by number

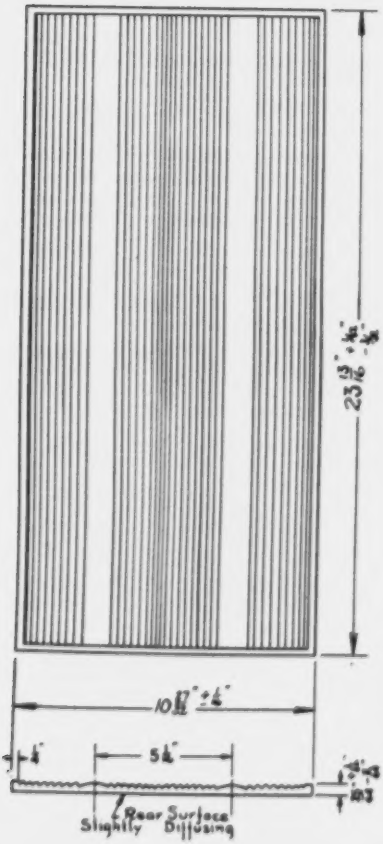
Warpage Tolerance—3.32" maximum departure from a plane surface.

Specifications for Corning Lens Panels for Fluorescent Lamps will be found on page 8.

LIGHTING SALES DEPARTMENT, CORNING, N. Y.

No. 90821 Twinlens Panel

Crystal Glass . . . Clear Face . . . Knurled Back



No. 90821 "TWINLENS" panel is 10-27/32" wide, 23-13/16" long and is 25/64" thick at the flange.

It is designed with two parallel fresnel lenses on 5-1/16" centers. The optical design of the individual lens is 5½" focus, and is the same as No. 90818 lens panel except the individual lenses are narrower.

Two fluorescent lamps can be located on the center line of the individual lens to produce a concentrating light distribution. Two, three or even four fluorescent lamps can be used to produce wide angle light distribution. (See Lighting Application.)

No. 90821 "TWINLENS" is made slightly smaller than No. 90818 lens panel so it can be used in a hinged frame. The frame and necessary housing can fit into the opening of a twelve inch acoustical ceiling tile.

The flange is designed so the panels can be stacked without chipping the tops of the prisms.

Ware will be packed in a manner most convenient to us, consistent with safety in transit.

Please order by number

SUGGESTED SPECIFICATIONS FOR LENS PANELS FOR FLUORESCENT LAMP

The lens for the fluorescent lamp shall be made of a colorless crystal glass and shall be plano-convex of the Fresnel type (sectored or corrugated) regrooved to a flat plane. The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over 7 to the inch, to effect a more efficient light control. The rear surface of the lens shall have a slight mould surface-roughening so as to produce a slight diffusion. The lens, lamp and reflector shall be combined and assembled in the housing so as to essentially produce a *concentrating* light distribution.

*Or wide angle light distribution.

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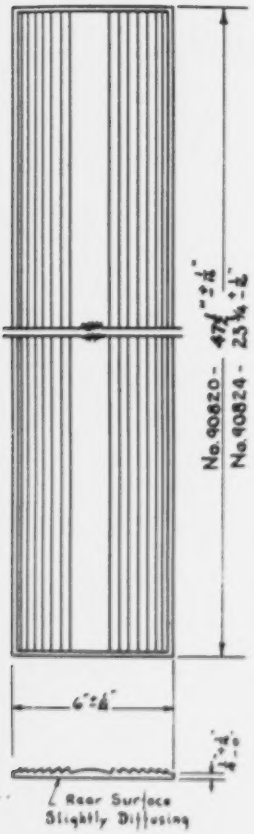
Fluorescent Lamp Lens Panel

Crystal Glass . . . Clear Face . . . Knurled Back



Fresnel lens panels 6" wide, having a flange approximately ¼" wide on all four sides are offered in two lengths for strip lighting.

These lens panels are of the same optical design as No. 90812 "Waffle" lens but are offered in the single lens width. They are furnished in two separate lengths without cross grooving.

A concentrated light beam is produced with the lamp located 3¼" behind the rear surface of the lens; moving the lamp closer to the lens spreads the light beam—as will be noted from the graph below. The use of a reflector behind the lens and lamp will alter the light distribution.

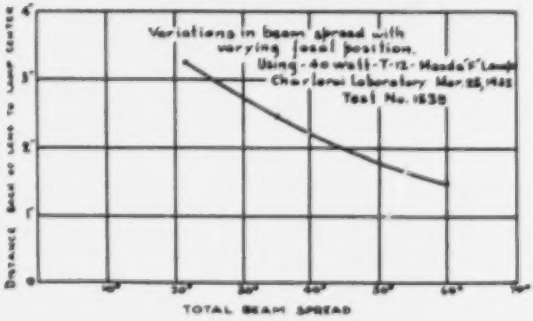
No. 90820 has a length of 47½" and is designed for use with a single 40 watt lamp.

No. 90824 has a length of 23¾" and is designed for use with a single 20 watt lamp.

Ware will be packed in a manner most convenient to us, consistent with safety in transit.

Please order by number

Specification for Corning Lens Panels for Fluorescent Lamps will be found on page 8.



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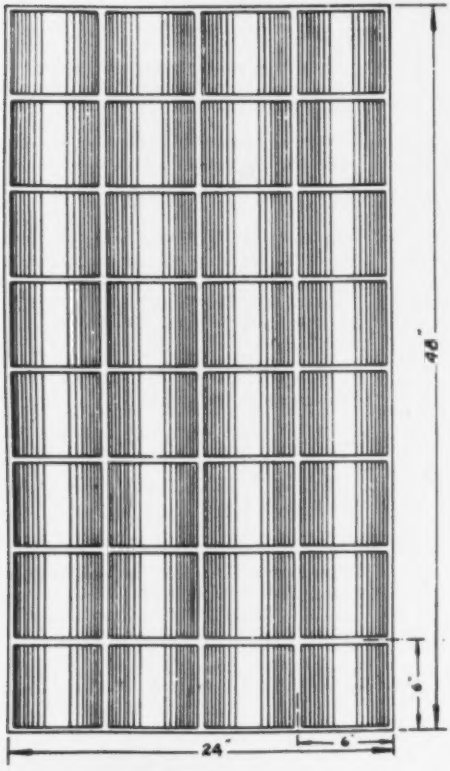
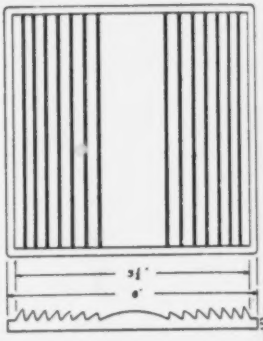
No. 90812 — "Waffle" Lens Panel

Crystal Glass . . . Clear Face . . . Knurled Back





No. 90812 "WAFFLE" lens panel is made up of four 6" wide, 3¼" lens focal length fresnel lenses. Each lens is interrupted by a cross groove every six inches. These long lenses are separated by grooving as will be noted from the illustration at the left.

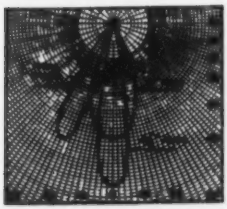
Panel should be mounted with prism side away from lamps.

No. 90812 "WAFFLE" lens panel is offered in the full 24"x48" size for four 40 watt fluorescent lamps or can be cut to smaller flanged panels for other fluorescent lamps. Edges will be ground.

Size	*Suggested Fluorescent Lamps*	
6x18	1—15 W	Ware To Be Packed in a Manner Most Convenient To Us
6x24	1—20 W	
6x48	1—40 W	
12x24	2—20 W	
12x48	2—40 W	
24x48	4—40 W	

Panels can be cut to other sizes.

To order give number and size i.e.
55 Pieces No. 90812 Crystal 6"x48".



CANDLEPOWER DISTRIBUTION

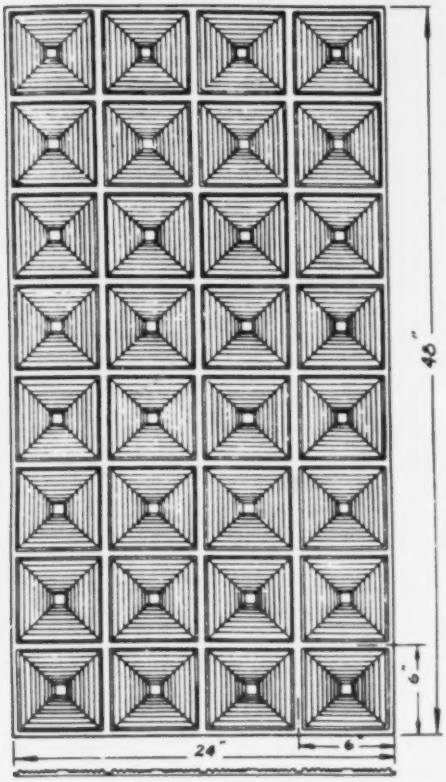
Crystal Glass Panel
No. 90812 6"x18"

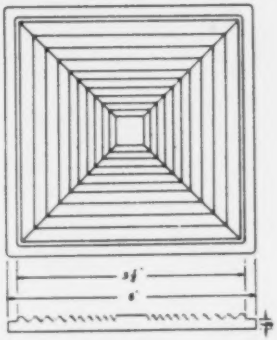
White Fluorescent Lamp
15W 18 inch T-8 115V

Charleroi Laboratory
Test No. 1231 5/3/40
Test Distance 9 feet.

No. 90825 — Diffusing "Waffle"

Crystal Glass . . . Clear Face . . . Knurled Back





No. 90825 Diffusing "WAFFLE" panel is made up of 6" square units, the design being concentric square pattern.

Drastically different lighting and decorative effects can be secured by having the lamps centered on the cutting groove instead of the center of the individual squares. The panel may also be used with the prisms facing the light source instead of away from the lamps.

No. 90825 diffusing "WAFFLE" is offered in the full 24"x48" size for use with four to eight 40 watt fluorescent lamps, or can be cut to smaller flanged panels for other fluorescent lamps. Edges will be ground.

Size	*Suggested Fluorescent Lamps*	
6x18	1-2 15 W	Ware To Be Packed in a Manner Most Convenient To Us
6x24	1-2 20 W	
6x48	1-2 40 W	
12x24	2-4 20 W	
12x48	2-4 40 W	
24x48	4-8 40 W	

Panels can be cut to other sizes.

To order give number and size i.e. 75 pieces No. 90825 Crystal 6x48".

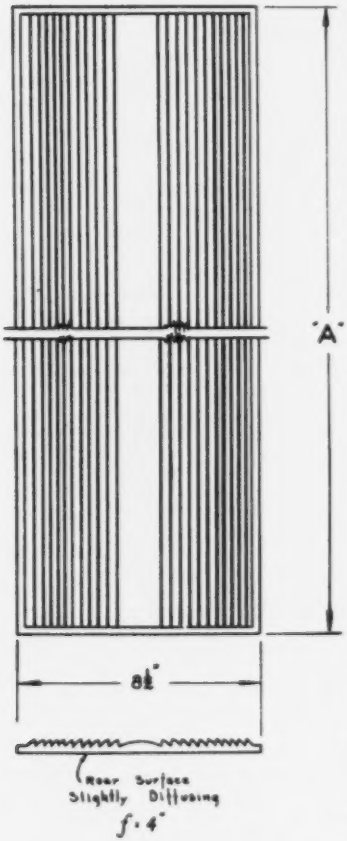
Note the grooved construction of these waffles. A groove running lengthwise or crosswise every six inches allows the panel to be cut into multiples of 6 inches, each size having a flanged termination. This grooving is useful as a means of supporting the panel, as a means of bracing a hinged frame, and as a place to insert a louvre to obscure an end view into the fixture.

LIGHTING SALES DEPARTMENT, CORNING, N. Y.

8659-6-42
Litho in U.S.A.

Fluorescent Lamp Lens Panel

Crystal Glass . . . Clear Face . . . Knurled Back



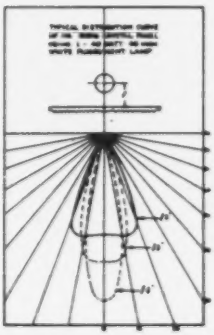
Fresnel lens panels 8½" wide, having a flange approximately ¼" wide on all 4 sides are offered in correct lengths for the various fluorescent lamps, up to and including the 100 W lamp.

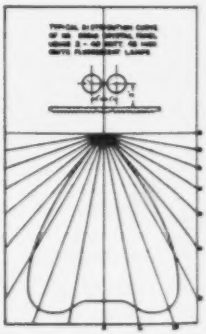
These panels have been designed on the basis of a 4" focus. A concentrating type of beam is secured with the lamp located 4" behind the rear surface of the lens; moving the lamp closer to the lens spreads the light; moving the lamp off the axis of the lens tilts the beam in the opposite direction. In some cases, two lamps can be used behind the lens to secure very desirable light distribution.

These fluorescent lamp lens panels should meet wide application in the commercial, industrial and residential lighting fields.

Number	*Size*	*Suggested Fluorescent Lamp*	
90814	8½ x 18	1-2— 15 W	Packed
90813	8½ x 24	1-2— 20 W	in a
			Manner Most
90816	8½ x 48	1-2— 40 W	Convenient
90817	8½ x 60	1 —100 W	to us

Please order by number.



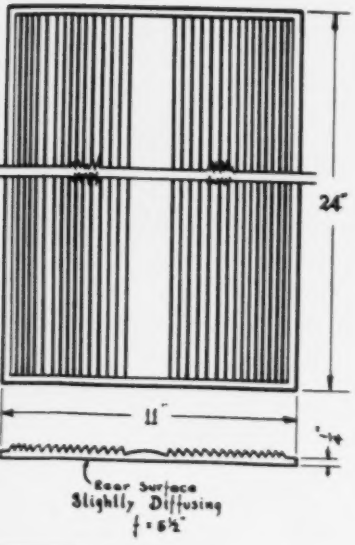


LIGHTING SALES DEPARTMENT, CORNING, N. Y.

5-65 P-642
Litho in U.S.A.

No. 90818—Fluorescent Lamp Lens Panel

Crystal Glass . . . Clear Face . . . Knurled Back



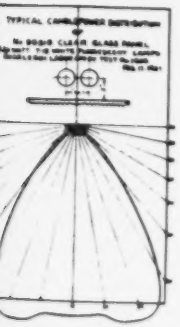
No. 90818 fresnel lens panel is 11" wide, 24" long, having a flange approximately ¼" wide on the sides and ⅛" wide on the ends. It has been designed to produce a concentrated beam with the lamp at the 5½" focal point, or a spreading beam with the lamp located closer to the lens.

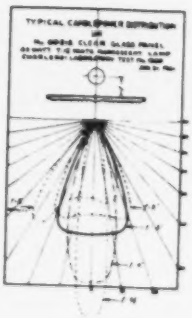
Although it has been designed primarily for use in acoustical tile ceilings it will also find use in suspension and other types of luminaires. The 11" width allows the lens and the necessary housing to be installed in the 12" tile opening. The 24" length was selected as being the most convenient to handle. The length being equivalent to two tiles enables any number of lengths of this panel to be used end to end and have the same breaks as the adjacent tile.

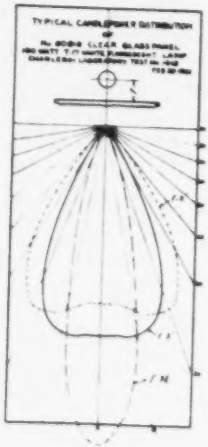
One or two 40 watt lamps can be used behind this panel—or one of the 100 watt lamps.

Ware will be packed in a manner most convenient to us.

Please order by number.







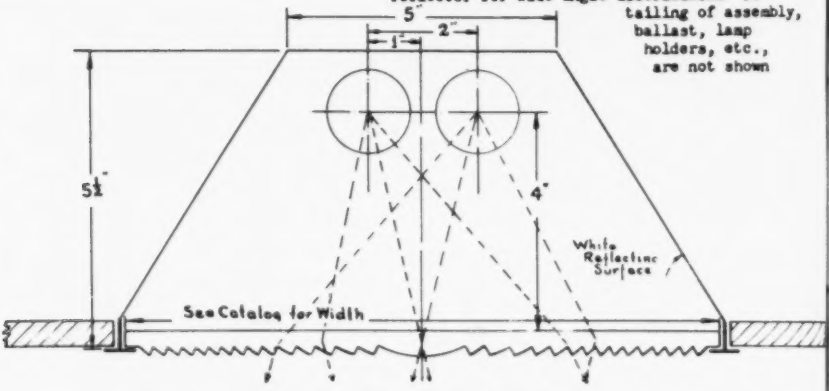
CORNING GLASS WORKS . . . . LIGHTING GLASSWARE

LIGHTING APPLICATION NO. 90818 OR NO. 54357 LENS PANEL
CONCENTRATING DISTRIBUTION - USING TWO LAMPS

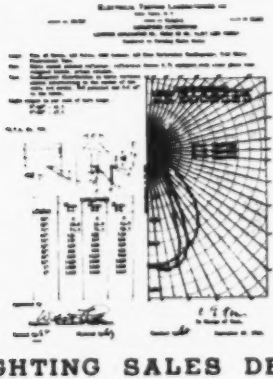
- For Localized Lighting -

As a Recessed or Suspension Luminaire for the Illumination of Industrial Plants - Work Benches, Assembly Belts, Inspection Tables, Sorting Tables, Laboratories - Offices - Schools - Desks, Charts, Bulletin Boards, File Cabinets - Stores - Counters, Shelves, Displays, Show Windows - Banks - Counter Space - Art Galleries - Libraries - Book Stacks - Cafeterias - Food Counters, Displays

NOTE - The purpose of this sketch is to show the relationship between the lens, lamp and reflector for wide angle distribution Detailing of assembly, ballast, lamp holders, etc., are not shown



CORNING NO 90818 OR NO 54357 LENS PANEL



SPECIFICATIONS

The lens for the fluorescent lamp shall be made of a colorless crystal glass and shall be plano-convex of the Fresnel type (sectored or corrugated) regressed to a flat plane The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over seven to the inch, to effect a more efficient light control The rear surface of the lens shall have a slight mould surface-roughening so as to produce a slight diffusion The lens, lamp and reflector shall be combined and assembled in the housing as per sketch so as to essentially produce a concentrating light distribution

LIGHTING SALES DEPARTMENT, CORNING, N. Y.

3-652-642
Litho in U.S.A.

CORNING GLASS WORKS . . . . LIGHTING GLASSWARE

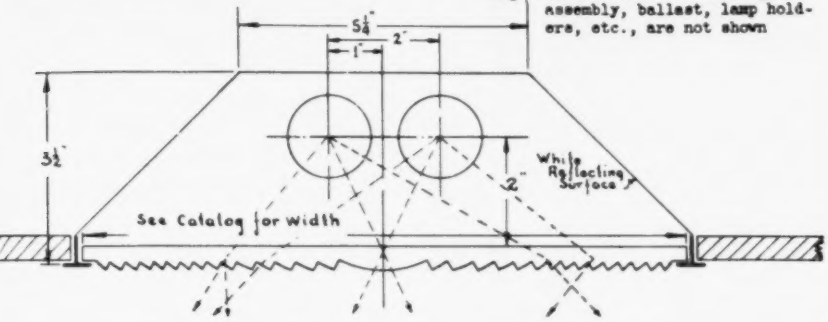
LIGHTING APPLICATION NO. 90818 OR NO. 54357 LENS PANEL
WIDE ANGLE DISTRIBUTION - USING TWO LAMPS

- For General Illumination -

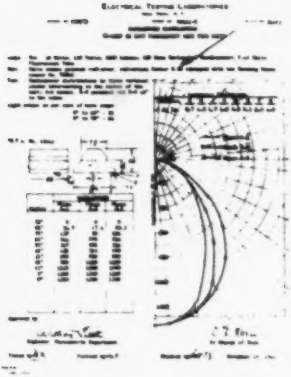
As a Recessed or Suspension Luminaire for the Illumination of Industrial Plants - Assembly Lines, Working Areas, Inspection Areas, Drafting Rooms - Private Offices - General Offices - Laboratories - Banks - Display Rooms - Restaurants

NOTE - In case of recessed equipment the housing should be sufficiently large to meet Underwriters' requirements

NOTE - The purpose of this sketch is to show the relationship between lens, lamp and reflector for wide angle distribution Detailing of assembly, ballast, lamp holders, etc., are not shown



CORNING NO 90818 OR NO 54357 CRYSTAL LENS PANEL



SPECIFICATIONS

The lens for the fluorescent lamp shall be made of a colorless crystal glass and shall be plano-convex of the Fresnel type (sectored or corrugated) regressed to a flat plane The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over seven to the inch, to effect a more efficient light control The rear surface of the lens shall have a slight mould surface-roughening so as to produce a slight diffusion The lens, lamp and reflector shall be combined and assembled in the housing as per sketch so as to essentially produce a wide angle light distribution

490

ELECTRICAL TESTING LABORATORIES

NEW YORK, N. Y.

REPORT NO 158573 ORDER NO 82411-S PLATE NO 3622

CANDLEPOWER DISTRIBUTION

TU-LAMP 40 WATT FLUORESCENT LENS TYPE UNIT*

Lamps - Two - 40 Watts; 118 Volts; 2100 Lumens; 230 Mean Horizontal Candlepower; T-12 White Fluorescent Tube.

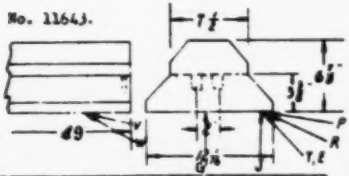
Unit - White enamel painted reflector, reflection factor 0.82 equipped with two Corning Glass Lenses No. 90818.

Test - Candlepower distribution in three vertical planes intersecting in the center of the unit; A-A normal, B-B parallel and C-C 45° to the tubes.

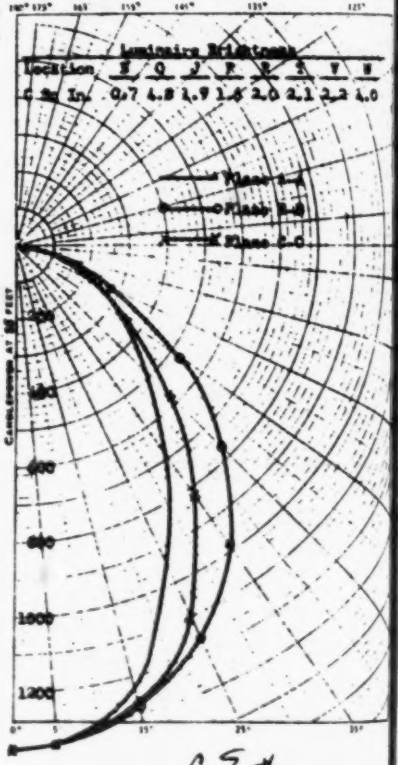
Light output in per cent of bare lamps

0° to 60° - 55
0° to 90° - 64

*E.T.L. No. 11643.



Angles	CANDLEPOWER Plane A-A	Plane B-B	Plane C-C
90°	0	0	0
85°	34.9	17.4	23.3
75°	139	98	104
65°	244	275	214
55°	347	525	354
45°	475	765	570
35°	690	980	820
25°	950	1160	1100
15°	1230	1280	1270
5°	1340	1340	1340
0°	1350	1350	1350



Approved by

William Little
Engineer, Photometric Department.

C. E. Horn
In Charge of Test.

Tested by [illegible] Plotted by [illegible] Checked by [illegible] November 19, 1941.

Form M-33
Litho in U.S.A.

CORNING GLASS WORKS . . . . LIGHTING GLASSWARE

LIGHTING APPLICATION NO. 90821 OR NO. 54358 LENS PANEL
WIDE ANGLE DISTRIBUTION - USING FOUR LAMPS

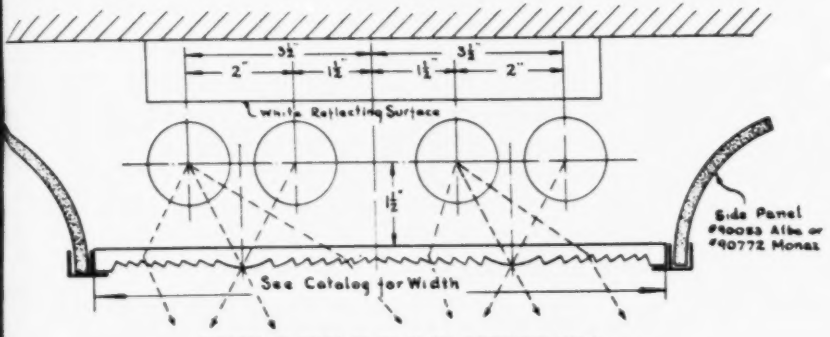
- For General Illumination -

As a Surface Mounted or Suspension Luminaire for the Illumination of

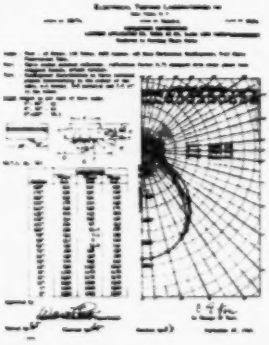
Private Offices	Banks	Restaurants
General Office	Churches	Stores
Laboratories	Libraries	Display Rooms

NOTE - Due to the heat problem the luminaire should not be of the recessed type and there should be ample provision for ventilation

NOTE - The purpose of this sketch is to show the relationship between lens and lamps for Wide Angle Distribution Details of assembly, ballast, lamp holders are not shown



CORNING NO 90821 OR NO 54358 "TWINLENS" PANEL



SPECIFICATIONS

The lens for the fluorescent lamp shall be made of a colorless crystal glass and shall be plano-convex of the Fresnel type (sectored or corrugated) regressed to a flat plane The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over seven to the inch, to effect a more efficient light control The rear surface of the lens shall have a slight mould surface-roughening so as to produce a slight diffusion The lens, lamp and reflector shall be combined and assembled in the housing as per sketch so as to essentially produce a wide angle light distribution

LIGHTING SALES DEPARTMENT, CORNING, N. Y.

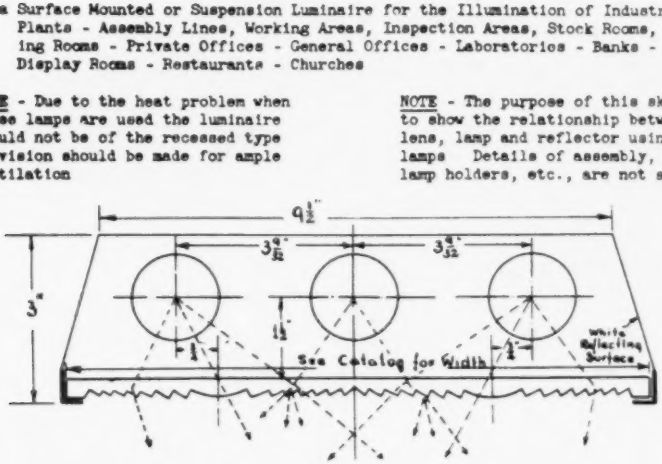
LIGHTING APPLICATION NO. 90821 OR NO. 54358 "TWINLENS" PANEL
WIDE ANGLE DISTRIBUTION - USING THREE LAMPS

- For General Illumination -

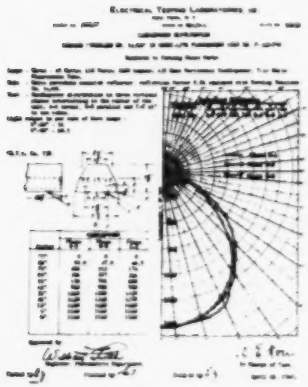
As a Surface Mounted or Suspension Luminaire for the Illumination of Industrial Plants - Assembly Lines, Working Areas, Inspection Areas, Stock Rooms, Drafting Rooms - Private Offices - General Offices - Laboratories - Banks - Stores - Display Rooms - Restaurants - Churches

NOTE - Due to the heat problem when three lamps are used the luminaire should not be of the recessed type Provision should be made for ample ventilation

NOTE - The purpose of this sketch is to show the relationship between lens, lamp and reflector using three lamps Details of assembly, ballast lamp holders, etc., are not shown



CORNING NO 90821 OR NO 54358 "TWINLENS" PANEL



SPECIFICATIONS

The lens for the Fluorescent Lamp should be made of a colorless crystal glass and shall be plano-convex of the Fresnel Type (soctored or corrugated) regressed to a flat plane The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over seven to the inch, to effect a more efficient light control The rear surface of the lens shall have a slight mould surface roughening so as to produce a slight diffusion The lens, lamp and reflector shall be combined and assembled in the housing as per sketch so as to essentially produce a wide angle light distribution

B-65 R 6 42
Litho in U.S.A

1933

ELECTRICAL TESTING LABORATORIES, INC.

NEW YORK, N. Y.

REPORT NO. 300127 ORDER NO 90239-L PLATE NO 50032

CANDLEPOWER DISTRIBUTION

CORNING "TWINLENS NO. 54358" IN CONDI-LITE FLUORESCENT UNIT NO. F-340-FTC

Rendered to Corning Glass Works

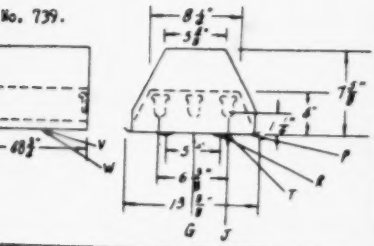
Three - 40 Watts; 118 Volts; 2100 Lumens; 230 Mean Horizontal Candlepower; T-12 White Fluorescent Tube.

White porcelain enameled reflector, reflection factor 0.81 equipped with Corning Twinlens No. 54358.

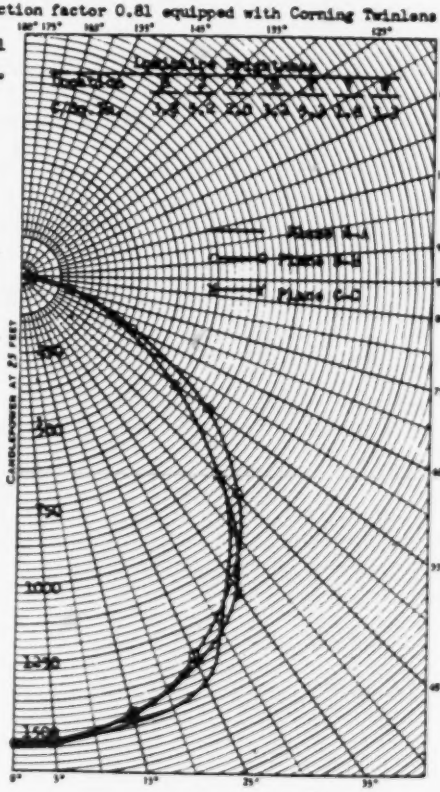
Candlepower distribution in three vertical planes intersecting in the center of the unit; A-A normal, B-B parallel and C-C 45° to the tubes.

Output in per cent of bare lamps -
0°-60° - 51
0°-90° - 60.5

No. 739.



Angles	CANDLEPOWER Plane A-A	Plane B-B	Plane C-C
90°	0	0	0
85°	55.0	27.0	46.5
75°	205	153	174
65°	356	397	346
55°	570	725	600
45°	910	980	900
35°	1160	1180	1230
25°	1430	1340	1370
15°	1480	1450	1460
5°	1520	1510	1510
0°	1510	1510	1510



Approved by

William Thirk
Engineer, Photometric Department.

Plotted by: [illegible]

Checked by: E.J

C. E. Horn
In Charge of Test.

April 20, 1942.

557

OSE IN CENTER

CORNING GLASS WORKS . . . . LIGHTING GLASSWARE

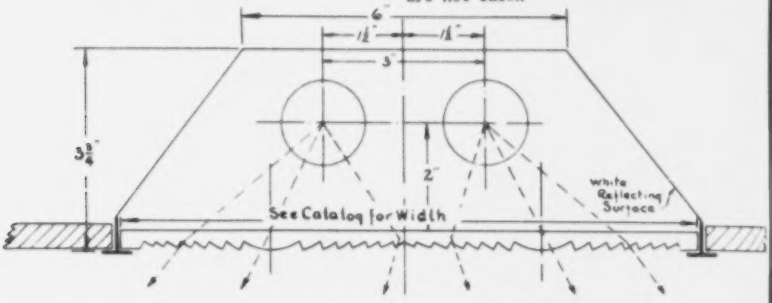
LIGHTING APPLICATION NO. 90821 OR NO. 54358 "TWINLENS" PANEL
WIDE ANGLE DISTRIBUTION - USING TWO LAMPS

- For General Illumination -

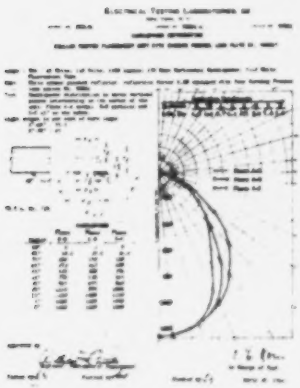
As a Recessed or Suspension Luminaire for the Illumination of Industrial Plants - Assembly Lines, Working Areas, Inspection Areas, Stock Rooms, Drafting Rooms - Private Offices - General Offices - Laboratories - Banks - Stores - Display Rooms - Restaurants - Churches

NOTE - In case of recessed equipment the housing should be sufficiently large to meet requirements of the Underwriters

NOTE - The purpose of this sketch is to show the relationship between the lens lamp and reflector for wide angle distribution Detailing of assembly, ballast, lamp holders, etc., are not shown



CORNING NO 90821 OR NO 54358 "TWINLENS" PANEL



SPECIFICATIONS

The lens for the fluorescent lamp shall be made of a colorless crystal glass and shall be plano-convex of the Fresnel type (sectored or corrugated) regressed to a flat plane The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over seven to the inch, to effect a more efficient light control The rear surface of the lens shall have a slight mould surface-roughening so as to produce a slight diffusion The lens, lamp and reflector shall be combined and assembled in the housing as per sketch so as to essentially produce a wide angle light distribution

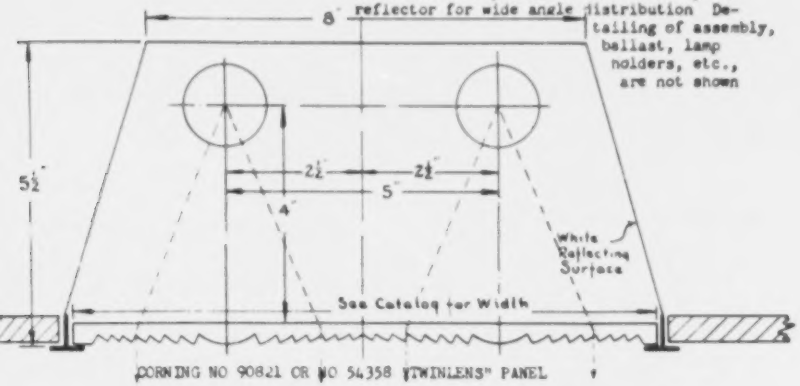
CORNING GLASS WORKS . . . . LIGHTING GLASSWARE

LIGHTING APPLICATION NO. 90821 OR NO. 54358 "TWINLENS" PANEL
CONCENTRATING DISTRIBUTION - USING TWO LAMPS

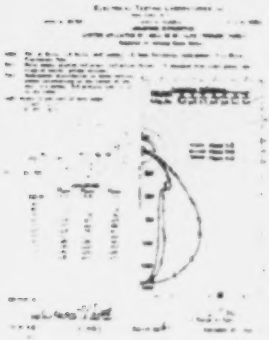
- For Localized Lighting -

As a Recessed or Suspension Luminaire for the Illumination of Industrial Plants - Work Benches, Assembly Belts, Inspection Tables, Switch-boards - Laboratories - Offices - Schools - Desks, Charts, Bulletin Boards, File Cabinets - Stores, Counters, Shelves, Displays, Show Windows - Banks - Counter Space - Art Galleries - Libraries, Book Stacks - Cafeterias, Food Counters, Displays

NOTE - The purpose of this sketch is to show the relationship between the lens, lamp and reflector for wide angle distribution. Detailing of assembly, ballast, lamp holders, etc., are not shown



CORNING NO 90821 OR NO 54358 "TWINLENS" PANEL



SPECIFICATIONS

The lens for the fluorescent lamp shall be made of a colorless crystal glass and shall be plano-convex of the Fresnel type (sectored or corrugated) regressed to a flat plane. The prisms shall be arranged symmetrically on each side of the center line of the lens and shall be large in size, not over seven to the inch, to effect a more efficient light control. The rear surface of the lens shall have a slight mould surface-roughening so as to produce a slight diffusion. The lens, lamp and reflector shall be combined and assembled in the housing as per sketch so as to essentially produce a concentrating light distribution.

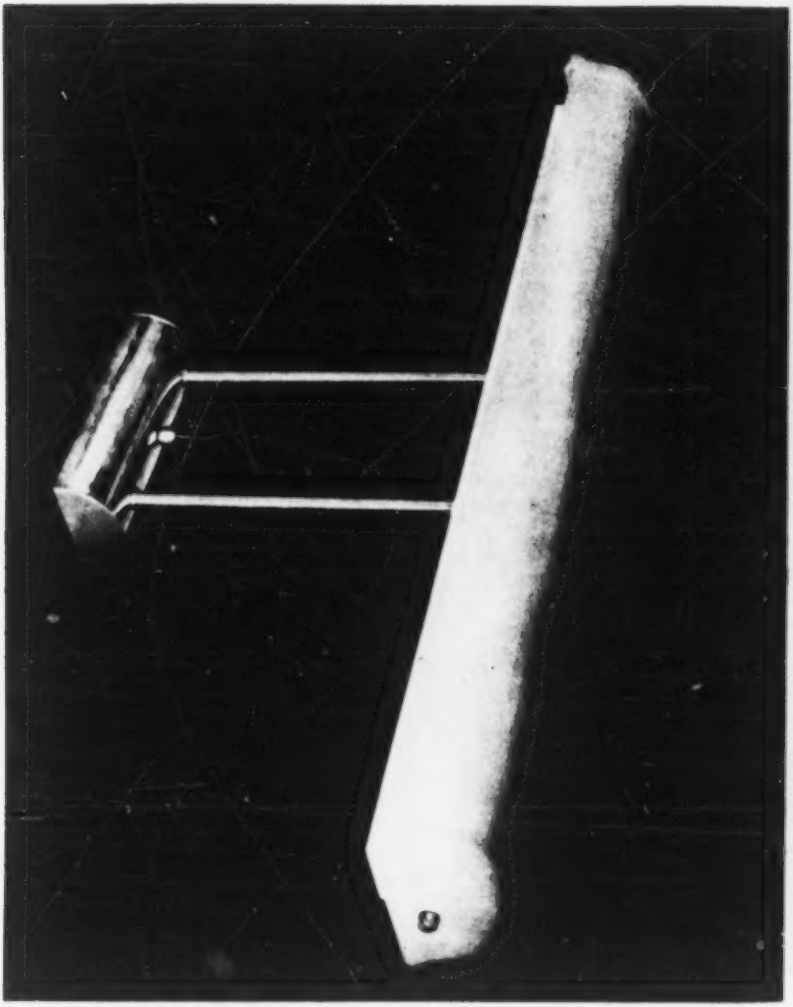
LIGHTING SALES DEPARTMENT, CORNING, N. Y.

OFFICE LIGHTING INSTALLATION, GENERAL MOTORS ACCEPTANCE CORP., MEMPHIS, TENN
Installation by Edwin F. Guth Co., St. Louis, Mo. Luminaire: Guth "G.S.T." Approx. 12 watts per square foot 221c

STORE LIGHTING INSTALLATION ROOS BROTHERS, OAKLAND, CAL
Installation by Peerless Electric Co., San Francisco, Cal. Architect A. K. Williams, San Francisco, Cal. Corning Shield No. 90763 with End Cap No. 90771

LIGHTING SALES DEPT., CORNING, N. Y.

CORNING GLASS WORKS . . . . LIGHTING GLASSWARE



LIGHTING SALES DEPT., CORNING, N. Y.

FILE ROOM ILLUMINATION FOR INSURANCE COMPANY

Installation by Polarizing Instrument Co., New York, N. Y. Corning No. 9612 6" x 48" panel. 40 watt fluorescent lamp. Designed to direct light into open drawer. Approx. 25 f.c.

LENS LIGHTING INSTALLATION, PEOPLES NATIONAL BANK, SEATTLE, WASH

Installation by Seattle Lighting Fixture Co., Seattle, Wash. Corning No. 9068 Lens Reflector

LIGHTING SALES DEPT., CORNING, N. Y.

LENS LIGHTING INSTALLATION FOR ADVERTISING AGENCY OFFICE
Installation by Polarizing Instrument Co., New York, N. Y. Corning No. 9082 6" x 48" Lens Panel

LIGHTING SALES DEPT., CORNING, N. Y.

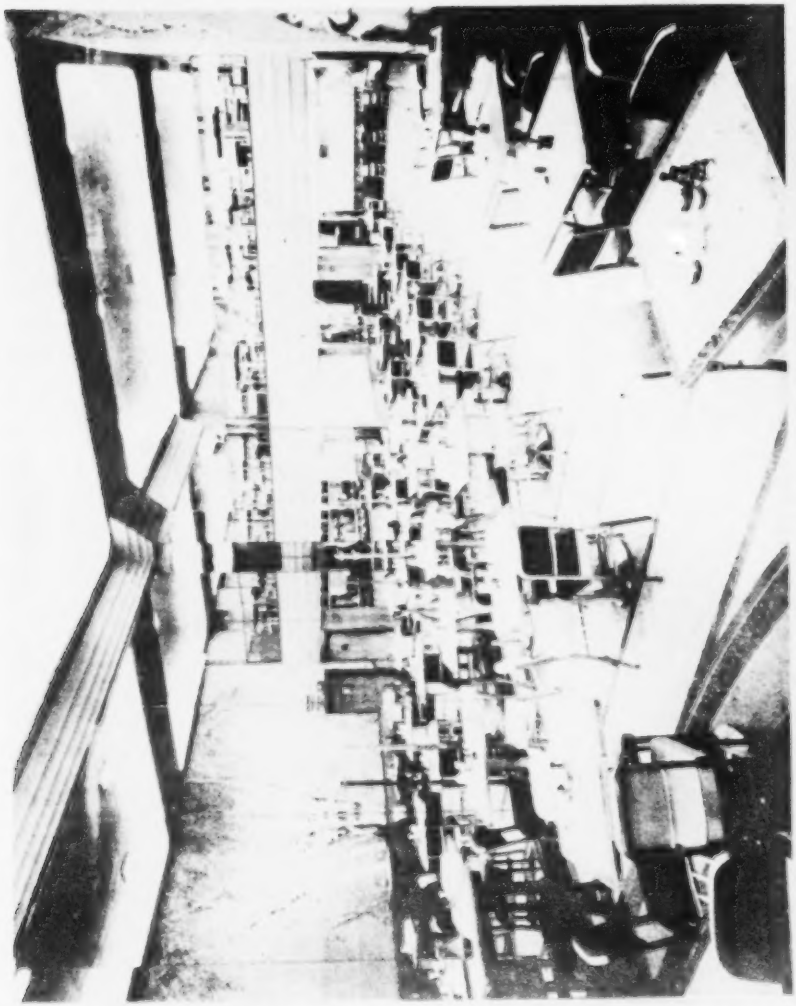
FIRST NATIONAL BANK, LA GRANDE, ORE.
Installation by Baker Barbon Corp., Portland, Ore. Corning Lens No. 50812. Sixteen fixtures each 4-40 watt lamps. 35 f c.

ENGINEERING DEPARTMENT ADMINISTRATION BUILDING BOEING AIRPLANE COMPANY WICHITA KANSAS
Corning Pin-o-guide lens panels, Code No. 5457, with 240 watt Mazda F lamps per 4 foot section, spaced on rows
4 feet apart provide 50 foot candles illumination

CORNING GLASS WORKS LIGHTING GLASSWARE

LIGHTING DIVISION, CORNING, NEW YORK

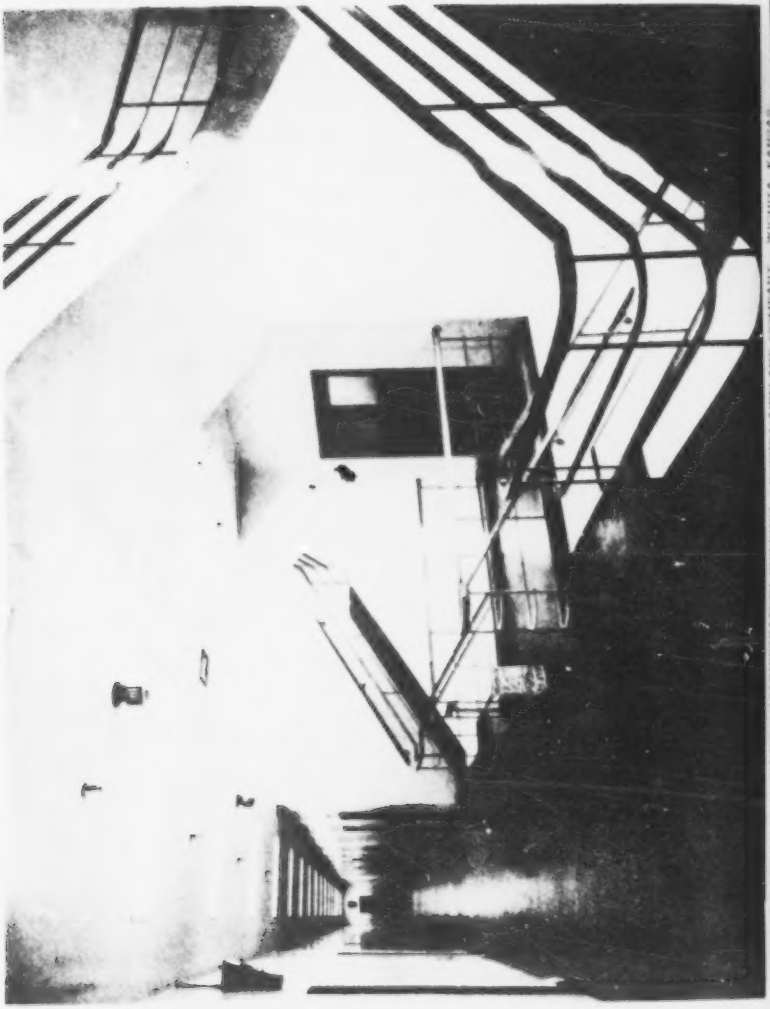
COMBINATION INCANDESCENT LENS LIGHTING-FLUORESCENT LIGHTING
CARNEGIE ART GALLERY, PITTSBURGH, PA.
Installation by Westinghouse Electric and Manufacturing Co., Cleveland, Ohio.



COMBINATION INCANDESCENT LENS LIGHTING FLUORESCENT LIGHTING

LIGHTING SALES DEPT., CORNING, N. Y.

COMBINATION INCANDESCENT-LENS LIGHTING-FLUORESCENT LIGHTING SHOW ROOM ST JOSEPH RY LIGHT, HEAT AND POWER CO ST JOSEPH, MO
Installation by Benson Manufacturing Co., Kansas City, Mo.
40% Fluorescent, 60% Incandescent 9.5 watts per square foot 68 f c



LIGHTING DIVISION, CORNING, NEW YORK

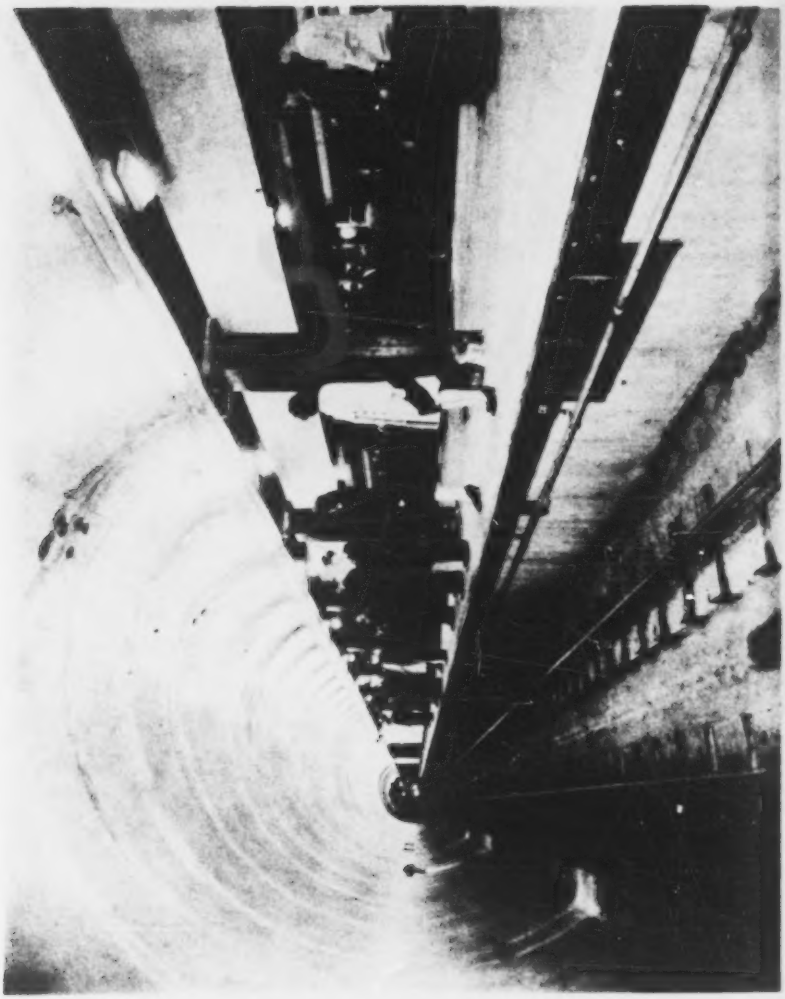
NING GLASS WORKS . . . . LIGHTING GLASSWARE

GENERAL OFFICE - A WAR PLANT IN CHICAGO AREA

Corning "Flat-o-guide" Albo panels, Code No. 90763, with 2-40 watt Mazda F lamps per fixture, spaced 10 feet apart provide 35 foot candles illumination

HTING DIVISION, CORNING, NEW YORK

573



TYPICAL INSTALLATION SHOWING TURF AND PLATFORM LIGHTING, CHICAGO SUBWAY
Corning Code No. 9760. Prismatic panels. Also furnished with type 'I' Mazda lamps. Code No. 9765, 12" panel

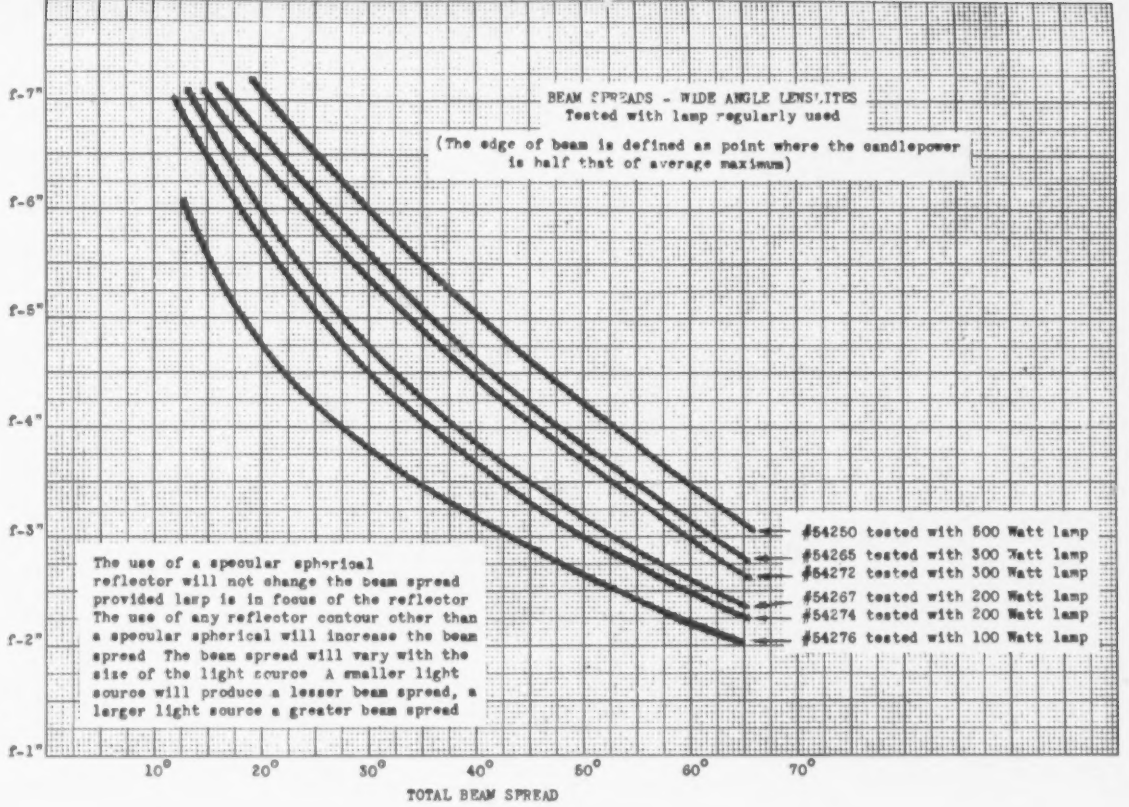
LIGHTING DIVISION, CORNING, NEW YORK

TYPICAL INSTALLATION SHOWING STATION LIGHTING - 207 AVE. SUBWAY
Corning Code No. 1646 Polished Alzak Reflector used with type T Mazda lamps

GHTING DIVISION, CORNING, NEW YORK

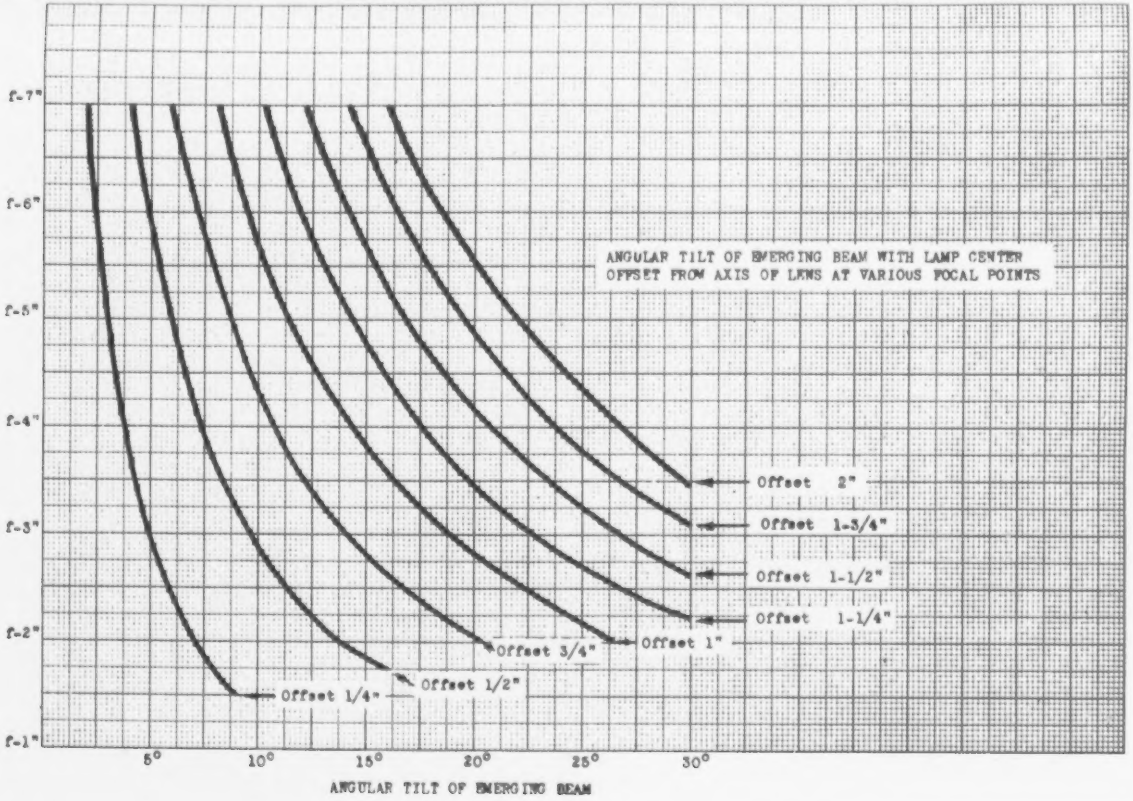
TYPICAL INSTALLATION SHOWING PLATFORM LIGHTING, CHICAGO SUBWAY
Corning Code No. 9086. Flat opaline panels used with type T Mazda lamp. Code No. 9085.
12" panel used as shield by fixture.

LIGHTING DIVISION, CORNING, NEW YORK


BEAM SPREADS - WIDE ANGLE LENSLITES
Tested with lamp regularly used
(The edge of beam is defined as point where the candlepower is half that of average maximum)
#54250 tested with 500 Watt lamp
#54265 tested with 300 Watt lamp
#54272 tested with 300 Watt lamp
#54267 tested with 200 Watt lamp
#54274 tested with 200 Watt lamp
#54276 tested with 100 Watt lamp
The use of a specular spherical reflector will not change the beam spread provided lamp is in focus of the reflector The use of any reflector contour other than a specular spherical will increase the beam spread The beam spread will vary with the size of the light source A smaller light source will produce a lesser beam spread, a larger light source a greater beam spread
f-7"
f-6"
f-5"
f-4"
f-3"
f-2"
f-1"
10°
20°
30°
40°
50°
60°
70°
TOTAL BEAM SPREAD
DISTANCE - FILAMENT TO BACK OF LENSLITE

577

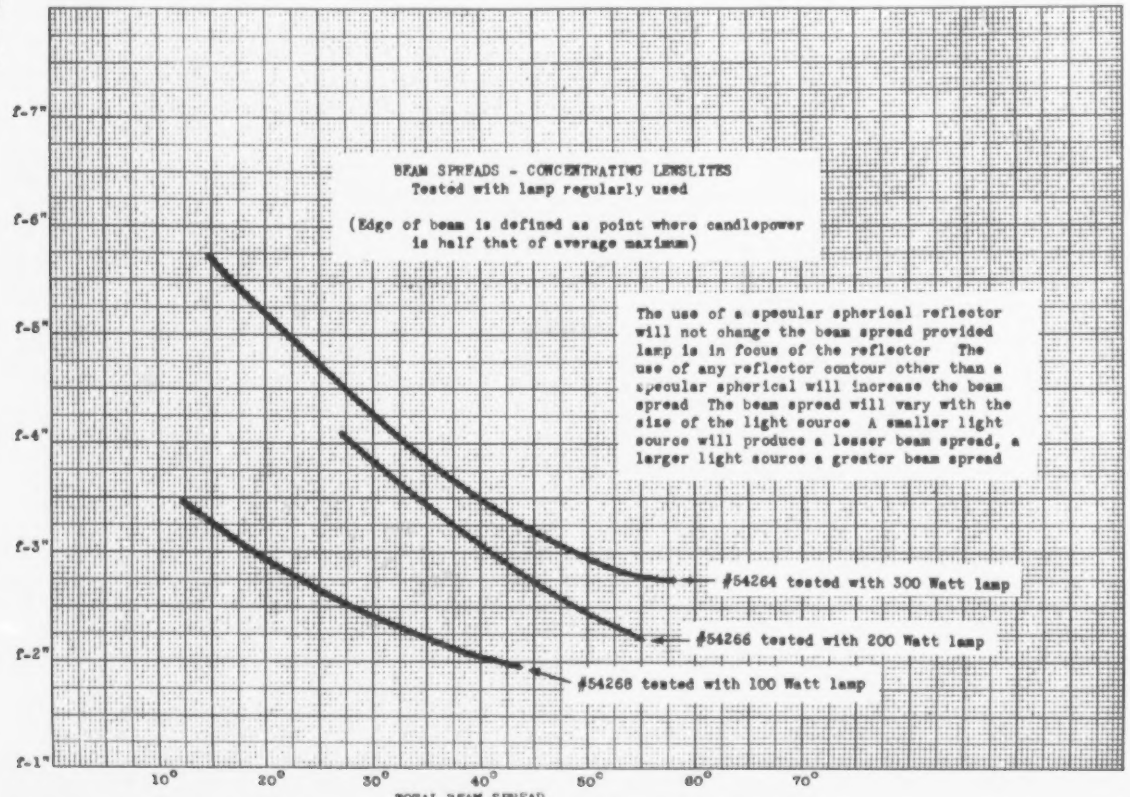
5183


ANGULAR TILT OF EMERGING BEAM WITH LAMP CENTER OFFSET FROM AXIS OF LENS AT VARIOUS FOCAL POINTS
f-7"
f-6"
f-5"
f-4"
f-3"
f-2"
f-1"
5°
10°
15°
20°
25°
30°
ANGULAR TILT OF EMERGING BEAM
DISTANCE - CENTER OF LAMP TO BACK OF LENS
Offset 2"
Offset 1-3/4"
Offset 1-1/2"
Offset 1-1/4"
Offset 1"
Offset 3/4"
Offset 1/2"
Offset 1/4"

514

578

515


BEAM SPREADS - CONCENTRATING LENSLITES
Tested with lamp regularly used
(Edge of beam is defined as point where candlepower is half that of average maximum)
The use of a specular spherical reflector will not change the beam spread provided lamp is in focus of the reflector The use of any reflector contour other than a specular spherical will increase the beam spread The beam spread will vary with the size of the light source A smaller light source will produce a lesser beam spread, a larger light source a greater beam spread
#54264 tested with 300 Watt lamp
#54266 tested with 200 Watt lamp
#54268 tested with 100 Watt lamp
f-7"
f-6"
f-5"
f-4"
f-3"
f-2"
f-1"
10°
20°
30°
40°
50°
60°
70°
TOTAL BEAM SPREAD
DISTANCE - FILAMENT TO BACK OF LENSLITE

579

DISTANCE - CENTER OF LAMP TO THE BACK OF LENS PANEL
BEAM SPREADS - LENS PANELS
Tested with Fluorescent lamp regularly used
(The edge of beam is defined as point where the candlepower is half that of average maximum)
Use of a reflector behind lens will increase beam spreads
Use of a larger diameter tube will increase beam spreads
Use of a smaller diameter tube will decrease beam spread
#90811 tested with 1"diameter tube (15 Watt lamp)
#90812 tested with 1" dia. tube (15 Watt lamp)
#90816 tested with 1½" dia. tube (40 Watt lamp)
#90816 tested with 1½" dia. tube (40 Watt lamp)
f-7"
f-6"
f-5"
f-4"
f-3"
f-2"
f-1"
10°
20°
30°
40°
50°
60°
70°
TOTAL BEAM SPREAD

ELECTRICAL TESTING LABORATORIES

NEW YORK, N. Y.

REPORT NO 158573 ORDER NO 82411-S PLATE NO 16223

CANDLEPOWER DISTRIBUTION

TU-LAMP 40 WATT FLUORESCENT LENS TYPE UNIT*

Lamps - Two - 40 Watts; 118 Volts; 2100 Lumens; 230 Mean Horizontal Candlepower; T-12 White Fluorescent Tube.

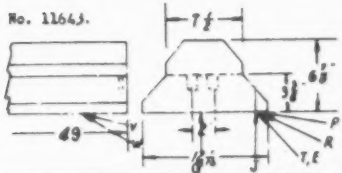
Unit - White enamel painted reflector, reflection factor (0.82) equipped with two Corning Glass Lenses No. 90818.

Test - Candlepower distribution in three vertical planes intersecting in the center of the unit; A-A normal, B-B parallel and C-C 45° to the tubes.

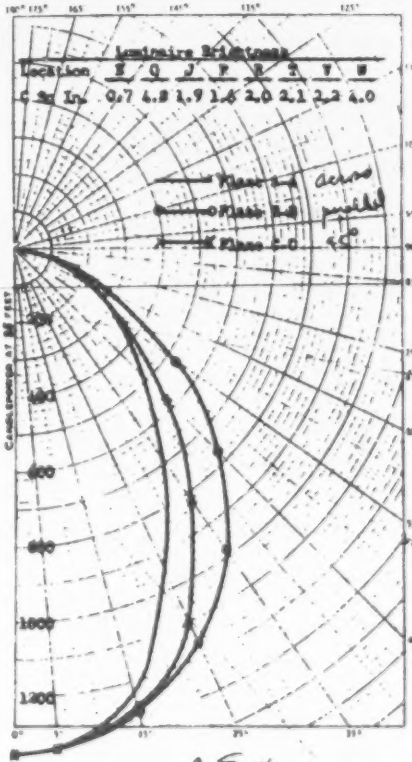
Light output in per cent of bare lamps

0° to 60° - 55
0° to 90° - 64

W.T.L. No. 11643.



Angles	CANDLEPOWER Plane A-A	Plane B-B	Plane C-C
90°	0	0	0
85°	34.9	17.4	23.3
75°	139	98	104
65°	244	275	214
55°	347	525	354
45°	475	765	570
35°	690	980	820
25°	950	1160	1100
15°	1230	1280	1270
5°	1340	1340	1340
0°	1350	1350	1350



Approved by

William Funk

Engineer, Photometric Department.

C. E. Horn

In Charge of Test.

Tested by M M Plotted by rm Checked by [illegible] November 19, 1941.

-- CONCENTRATING DISTRIBUTION --

Troffer Type Using Two 60 Watt Lamps

Flat White Finish

See Page 14 A — No. 04357 Lens or 00818 Lens Panel

Troffer Type Using Two 40 Watt Lamps

Flat White Finish

See Page 14 F — No. 04358 Tvinlens or No. 00821 Tvinlens Panel

Troffer, Surface Mounting or Suspension Luminaries

Troffer Type Using Two 60 Watt Lamps

See Page 14 B — No. 04357 Lens or No. 00818 Lens Panel

Troffer Type Using Two 40 Watt Lamps

See Page 14 E — No. 04358 Tvinlens or No. 00821 Tvinlens

Surface Type Using Three 40 Watt Lamps

See Page 14 D — No. 04358 Tvinlens or No. 00821 Tvinlens Panel

Suspension Type Using Four 40 Watt Lamps

See Page 14 C — No. 04358 Tvinlens or No. 00821 Tvinlens Panel, No. 00003 Alba Side Panel

ILLUMINATION DATA		
Mounting Height Above Work	Width of Strip Illuminated	Average Illumination Within Strip
3	3.8 ft	116 F c
3-1/2	3.1 "	90 "
3	3.7 "	57 "
4	5.5 "	39 "
5	7.5 "	31 "
2	1.6 ft	138 F c
3-1/2	2.3 "	91 "
3	3.5 "	61 "
4	5.7 "	38 "
5	8.5 "	28 "

Rating of Concentrating Luminaire					
	Office and School	Stores	Industrial	Casual Seeing
Direct Glare	Special	A	A	A
Reflected Glare	Use Only	A	C	
Maintenance	Not	A-B	C	*
Illum on Horizontal	For general	A	A	
Illum on Vertical	Illumination	B	C	
Appearance		A	A	†

†Usually not important for this use
*Not recommended for this application

How to Use This Rating Chart

A-Good
B-Fair
C-Poor

It must be remembered that the relative importance of the various criteria should be carefully weighed with respect to the particular problem at hand. For instance, in an office the factors of major importance would rank: (1) Direct Glare; (2) Reflected Glare; (3) Illumination on Horizontal (4) Illumination on Vertical (5) Illumination on Horizontal (6) Illumination on Vertical; (7) Maintenance. In stores the order would generally be (1) Illumination on Horizontal; (2) Reflecting; (3) Illumination on Vertical.

582

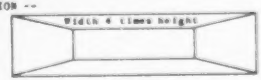
-- WIDE ANGLE DISTRIBUTION --

Rating of Wide Angle Luminaires				
	Office & Schools	Stores	Industries	Casual Seeing
Direct Glare	A-B	A	A	A
Reflected Glare	B	#	B	#
Maintenance	A-B	A-B	C	A-B
Illum on Horizontal	A	A	A	A
Illum on Vertical	A	B	C	B
Appearance	A	A	A	A

Direct Glare	A-B	A	A	A
Reflected Glare	B	#	B	#
Maintenance	A-B	A-B	C	A-B
Illum on Horizontal	A	A	A	A
Illum on Vertical	A	B	C	B
Appearance	A	A	A	A

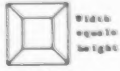
Direct Glare	A-B	A	A	A
Reflected Glare	B	A	B	B
Maintenance	A-B	A-B	C	B
Illum on Horizontal	A	A	A	A
Illum on Vertical	A	B	C	B
Appearance	B	B	A	A

Direct Glare	A-B	A	A	A
Reflected Glare	A-B	A		B
Maintenance	B	B	B	B
Illum on Horizontal	A	A		A
Illum on Vertical	A	A		B
Appearance	A	A		A



Large Room

Medium Room



Small Room

ILLUMINATION DATA

Large Rooms		Medium Rooms		Small Rooms	
Lt. Fin.	Med. Fin.	Lt. Fin.	Med. Fin.	Lt. Fin.	Med. Fin.

Square Feet per 4 foot length of fixture using the White Fluorescent lamp to produce approximately 50 foot candles in service. (doubling area covered will halve the foot candle, tripling will third etc) Depreciation of lamps and fixtures have been taken into consideration.

38	36	33	31	27	25
50	46	33	30	26	24
55	51	46	43	38	35
75	70	63	58	50	46

In addition to the above - fluorescent lensed luminaires can be used for many specialty lighting jobs - requiring either symmetrical or asymmetrical distribution. Send us details of your lighting problems.

HOW TO USE THIS GUIDE

1. Select type of fixtures Use Rating Chart.
2. Determine foot candles desired for seeing task See 'old foot candle tables.
3. Determine number of fixtures needed by dividing total floor area in sq ft by number of square feet per fixture to produce desired illumination.
4. Space fixtures evenly over floor area with due regard to beams, sprinkler heads, etc.
5. Specify Corning lenses and lens panels.

Corning manufactures glass only.

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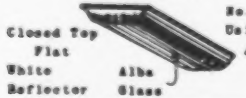
LIGHTING SALES DEPT CORNING GLASS WORKS CORNING, NEW YORK

COPY BOUND CL

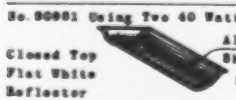
LIGHTING GUIDE - FLUORESCENT SHIELDED LUMINAIRES

Using Corning Process Shields
(Closed Ends - Flanged Four Sides)

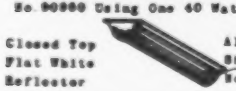
Surface Mounting or Suspension Luminaires



No. 90983
Using Four
40 Watt
Lamps



No. 90981 Using Two 40 Watt Lamps
No. 90981



No. 90980 Using One 40 Watt Lamp
No. 90980

Illumination Data

Large Room		Medium Room		Small Room	
Light Finish	Medium Finish	Light Finish	Medium Finish	Light Finish	Medium Finish

Square feet per 4 foot length of fixture using the White Fluorescent lamp to produce approximately 50 foot candles in service. (doubling area covered will halve the foot candle, tripling will third etc) Depreciation of lamps and fixtures have been taken into consideration

69	67	58	55	48	44
35	34	30	28	24	22
18	17	15	14	12	11

RATING OF SHIELDED LUMINAIRES

	Offices and Schools	Stores	Industrial	Casual Seeing
Direct Glare	B	A		A
Reflected Glare	A	A		B
Maintenance	A	A	*	A
Illum.on Horizontal	B	B		A
Illum.on Vertical	A	A		B
Appearance	A	A	*	A

*Not Recommended for this application

USING BLOWN SHIELDS - Either as Individual Units or Continuous Run

No. 90774 Using Four 40 Watt Lamps
No. 90774

No. 90763 Using Two 40 Watt Lamps
No. 90763

No. 90062 Using One 40 Watt Lamp
No. 90062

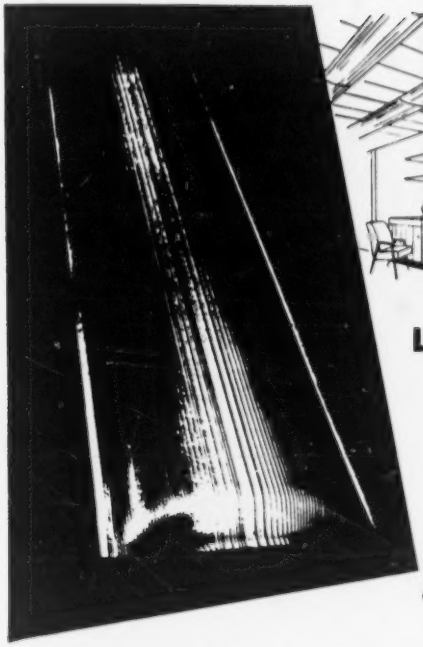
69	68	57	55	48	44
35	34	30	28	24	22
18	17	15	14	12	11

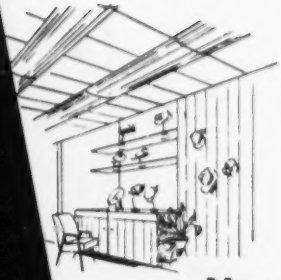
Although most shielded luminaires are mounted close to the ceiling they can be suspended as an open top semi-indirect Luminaire. Such fixtures have the advantage of greater output and reduced brightness but with a maintenance disadvantage. Corning Glass Works manufactures glassware only.

HOW TO USE THIS GUIDE

1. Select type of fixture (individual unit or continuous runs) See rating chart
2. Determine foot candles desired for seeing task involved. See standard foot candle tables for various seeing tasks.
3. Determine number of fixtures needed by dividing total floor area in square feet by number of sq.ft per fixture to produce desired illumination
4. Space fixtures evenly and symmetrically over floor area with due regard to beams, Sprinkler outlets, etc.
5. Specify Corning Alba Glass Shields

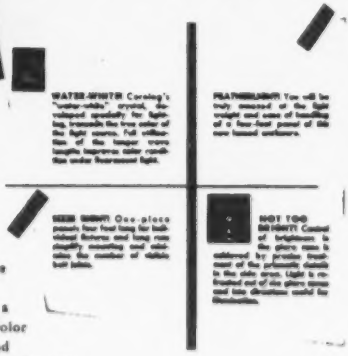
CLOSE IN CENTER





New Corning Lightweight Curved Lens Panel

Fixture-length for More Pleasing Appearance



Entirely new in the field of lensed enclosures is the new lightweight *single piece* Curved Lens Panel developed by Corning to complement the clean-lined styling of modern fluorescent fixtures. The pleasing appearance of its fixture-length panels of crystal-clear glass reflects the increasing importance of lighting glassware as an architectural element. The precise optical design in "water-white" crystal is a realization of the need for scientific control over the color and quality of the light produced. Open and closed end panels are available in four standard sizes, and consideration will be given to special lengths and widths. The coupon will give you complete information. Mail it today!

CORNING GLASS WORKS
CORNING, NEW YORK

Corning means research in Glass

1851 • 100 YEARS OF MAKING GLASS BETTER AND MORE USEFUL • 1951
Technical Products Division: Laboratory Glassware, Signalware, Glass Pipe, Gauge Glasses, Lightingware, Optical Glass, Glass Components

CORNING GLASS WORKS, Dept. 1E-12, Corning, N. Y.

Please send me complete information on new Lightweight Curved Lens Panels.

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____

Lighting in Theatres

Mine Lighting

Miscellaneous

Museum Lighting

Residence Lighting

School and Educational Area Lighting

Standards of Quality and Quantity for Interior Illumination

Street and Highway Lighting

Theatres

Defendant's Exhibit 2

MAY 20, 1930

LOrain 7-1500

THE KIRLIN COMPANY

3435 EAST JEFFERSON AVENUE
DETROIT 7, MICHIGAN

U.L. and I.B.E.W. Labelled

CONTRACTOR-DEALER COST

INCANDESCENT

Cat. No.	Cost to 40% disc.	LIST Price	Approx. Wt. lbs. pkd.
1207	$ 9.68	$16.13	8
1207SP (shock-proof glass)	12.61	21.02	8
1207F (Fota-lite glass)	11.88	19.80	8
1208	10.64	17.73	10
1208R (removable top)	15.04	25.06	10
1208L (louver door)	12.10	20.18	10
1208SP (shock-proof glass)	13.57	22.62	10
1208F (Fota-lite glass)	13.13	21.89	10
1208SUR (surface mounting)	16.87	28.11	10
1212	17.97	29.95	17
1212R (removable top)	22.37	37.29	17
1212L (E. C. louver door)	20.17	33.62	16
1212SP (shock-proof glass)	21.64	36.06	17
1212F (Fota-lite glass)	21.64	36.06	17
1212SUR (surface mounting)	24.86	41.44	18
1218 (or 1218R, remov. top)	43.93	73.21	43
1218SP (shock-proof glass)	46.86	78.10	42
1408 (round, after 9/15/50)	16.72	27.86	10
1409 (concentrating)	14.52	24.20	10
1409R (removable top)	18.70	31.17	10
1412 (concentrating)	20.90	34.84	17
1412R (removable top)	25.37	42.28	17
1413 (round, after 9/15/50)	23.84	39.73	17
1512 (clear lens center)	19.44	32.40	17
508	8.06	13.44	7
508SP (shock-proof glass)	11.00	18.33	7
508F (Fota-lite glass)	10.20	17.00	7
508NL (night light)	7.70	12.84	5
614 (after 9/15/50)	13.57	22.62	12
614SP (shock-proof glass)	16.87	28.11	12
614F (Fota-lite glass)	16.51	27.51	12
414 (40 or 75w tubular)	10.20	17.00	8
414SP (shock-proof glass)	13.13	21.89	8
4506 Exit (give color)	7.33	12.22	8
4506M Exit (metal front, color?)	9.83	16.38	8
4507 Exit (triangular, color?)	16.87	28.11	12
4516 Exit (No-Guard, color?)	13.57	22.62	9

See next page for PARTS and SPECIAL FEATURE prices

JULY 28, 1930

U.L. Label
I.B.E.W. Labels

THE KIRLIN COMPANY

CONTRACTOR-DEALER COST

INCANDESCENT PARTS and SPECIAL FEATURES

Glass Only

Cat. No.	Cost at 40% disc.	LIST Price
1207 Lens Only	$2.78	$ 4.64
1208 Lens Only	3.31	5.51
1212 Lens Only	4.77	7.95
1218 Lens Only	13.93	23.22
1409, 1408 Lens Only	4.04	6.73
1412, 1413 Lens Only	5.87	9.78
1512 Lens Only	6.24	10.40
414 Glass Only	1.18	1.96
508 Glass Only	1.18	1.96
614 Glass Only	2.05	3.42
4506 Glass (give color comb.)	2.20	3.67
4516 Glass (give color comb.)	7.12	11.87
Arrow on Exit, rt., left, extra	1.32	2.20

TAMPER-PROOF Door Screw instead of regular (spanner type stainless) no extra.
(No lamp theft). Allen hd. list .60

Boxes for pouring in **CONCRETE**, without louvers, and with special enamel, extra	.88	1.47
PLASTER FRAME, 1218 (no others)	3.52	5.87
LOUVER Only, Egg Crate, 1208	2.35	3.91
LOUVER Only, Egg Crate, 1212	3.23	5.38
Extra **SOCKET**, in exits (2 soc.)	1.03	1.71
Extra **SOCKET**, all others (2 cir.)	2.93	4.89
CONNECTING CHANNEL for groups	.73	1.22
CHROME (satin) extra, 508 Frame	1.76	2.93
CHROME 414; 1208, 1207, 1409, Frame	2.20	3.67
CHROME 1212, 1412, 614, 4506, 4516, Frame	2.35	3.91
CHROME 1218 Frame	3.52	5.87
CHROME 1409, 4516 Door	1.32	2.20
CHROME 1412 Door	1.55	2.58

Kirlin Fixtures are Packed One to a Carton.

Approved for building wire direct to fixture, no asbestos wire needed.

JULY 20, 1950

THE KIRLIN COMPANY

U.L. Labels
I.B.E.W. Labels

CONTRACTOR-DEALER COST

FLUORESCENT RECESSED (H.P.F. only)

State whether single sections or runs; length to wire for.

Cat. No.	Cost @ 40% disc.	LIST Price	Approx. Wt. lbs. pkd.
220B (hinged glass type)	$25.30	$42.17	34
220B10 (hinged, box 10" wide)	25.30	42.17	31
420B (hinged glass type)	38.42	64.04	49
230B (hinged glass type)	33.14	55.24	43
140B (hinged glass type)	29.18	48.64	50
240B (hinged glass type)	31.09	51.82	53
340B (hinged glass type)	37.69	62.82	58
440B (hinged glass type)	47.37	78.95	72
220TR (open)	20.17	33.62	24
220TR-EC or-DL (louvered)	23.84	39.73	28
420TR (open)	29.18	48.64	32
420TR-EC or-DL (louvered)	34.31	57.19	37
230TR (open)	23.90	39.83	32
230TR-EC or-DL (louvered)	29.41	49.02	37
240TR (open)	22.58	37.64	40
240TR-EC or-DL (louvered)	28.30	47.17	47
340TR (open)	29.18	48.64	45
340TR-EC (egg-crate) (louvered)	34.90	58.17	51
440TR (open)	34.90	58.17	60
440TR-EC or-DL (louvered)	43.34	72.24	69

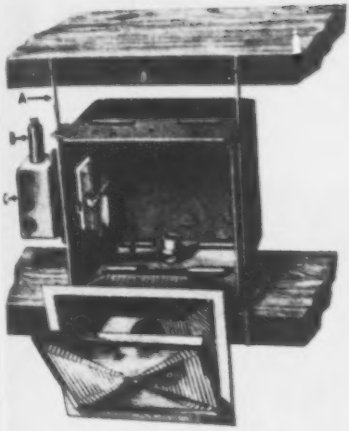
SNAP-ON DISC-LOUVERS (Std. Pkg. 12 ea. size, extra chg. broken pkgs.)

18D 18"	1.30	2.16	8
24D 24"	1.32	2.20	9
36D 36"	2.20	3.67	12
48D 48"	1.91	3.18	15
60D 60"	4.77	7.95	28

Weights given are for packages of 12 louvers.

PARTS and SPECIAL FEATURES (Fluorescent)

220B Glass Only (or 220B-10)	4.04	6.73
230B Glass Only	5.13	8.55
240B Glass Only (23½")	4.04	6.73
420B Glass or 440B (23½")	5.51	9.18
E. C. Louver only for 220TR	3.67	6.11
E. C. Louver only for 230TR, 240TR	5.72	9.53
E. C. Louver only for 420TR	5.13	8.55
E. C. Louver only for 440TR	8.44	14.07
SHOCK-RESISTING GLASS (instead of regular) for gym., etc. in 240B (2 pcs.) extra	10.26	17.10
WATCH-DOG starters, extra, ea.	.47	.78
ALZAK (pol) reflector in 240B	4.84	8.07
ALZAK (pol) reflector in 440B, TR.	6.74	11.24
CHROME (satin) extra, 220B Door	2.87	4.78
CHROME (satin) extra 220B Frame	3.52	5.87
CHROME (satin) extra 240B Door	4.40	7.33
CHROME (satin) 240B Frame, or 440B Door	6.60	11.00
CHROME (satin) 440B Frame	8.80	14.66



K

U.L. Labels
I.B.E.W. Labels

NEW METHOD OF INSTALLING

No Asbestos Wire needed, rubber-covered wire runs direct to fixture.

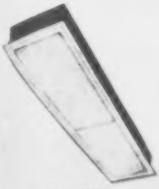
No Carpenter Work.

A—Mounting bars.
B—Romex, or RC wire in conduit.
C—Junction box.
D—Heat-insulated cover.
E—AF wire pigtails.

Temperature in junction-box is less than 60 C.

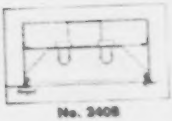
No. 614

No. 1208



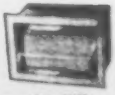
No. 2408

No. 2408
Fluorescent



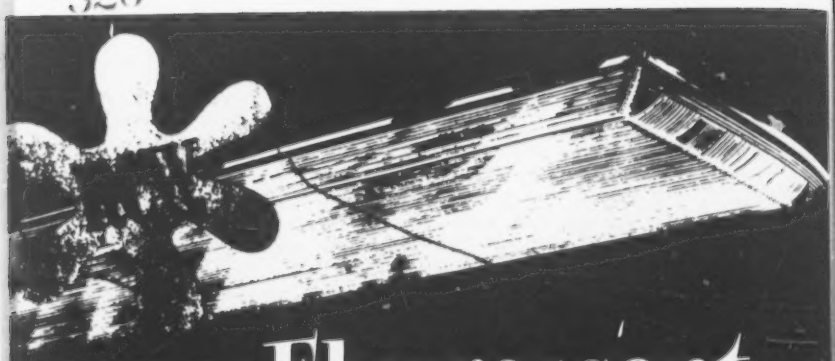
No. 2408

No. 4806 or 4816



No. 808

526 Defendant's Exhibit 3



Fluorescent Glass Panels

With "GEOMETRIC-GAUGED" GROOVING for SUPERIOR LIGHT DISTRIBUTION

New general purpose light weight fluorescent glass panels attractively priced, available in intermediate and end sections for standard size fixtures.

THE PHOENIX GLASS COMPANY

590

REPORT

Electrical Testing Laboratories, Inc.

East 82nd Street at First Avenue New York 28, N. Y.

Report No. 116427 Order No. 22619-L Date February 26, 1940

CANDLEPOWER DISTRIBUTION
SURFACE TYPE FLUORESCENT LUMINAIRE
TYPE - DIRECT

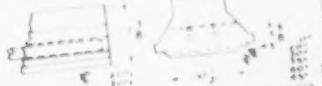
Rendered to Phoenix Glass Company

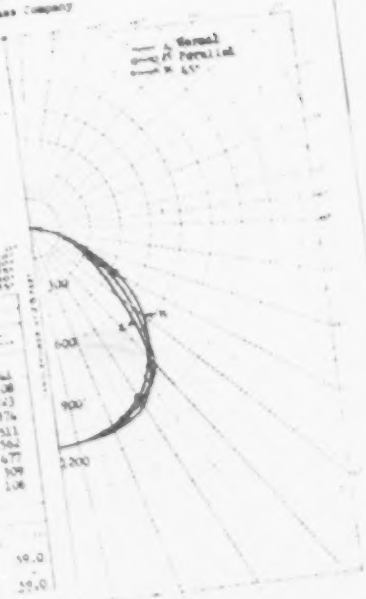
Lamps - Two - 40 Watts; 2700 Lumens; T-12 White Fluorescent.

Unit - Synthetic enameled metal housing, reflectance 0.81; curved prismatic glass bottom.

Test - Candlepower distribution in three vertical planes intersecting in the center of the unit.

RSTL No. 2112





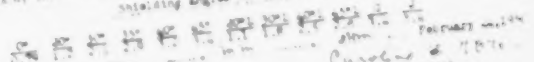
LUMINAIRE DISTRIBUTION DATA

Axes Vertical

0°	0°	10.6	
0°	0°	17.9	
0°	0°	10%	138
0°	0°	30%	423
0°	0°	61%	776
0°	0°	86%	511
0°	0°	99%	562
0°	0°	103%	671
0°	0°	109%	309
0°	0°	111%	108
0°	0°	112%	
0°	7.0°	0°	

LUMINAIRE BRIGHTNESS

Shielding Angle Curves



REPORT

Electrical Testing Laboratories, Inc.

East 82nd Street at First Avenue New York 28, N. Y.

Report No. 115418 Order No. 22614-L Date March 6, 1940

CANDLEPOWER DISTRIBUTION
SURFACE TYPE FLUORESCENT LUMINAIRE
TYPE - DIRECT

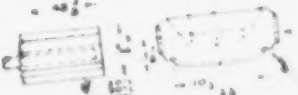
Rendered to The Phoenix Glass Company

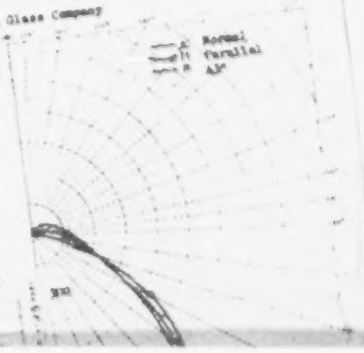
Lamps - Three - 40 Watts, 2100 Lumens, T-12 White Fluorescent.

Unit - Synthetic enameled metal housing, reflectance 0.90; clear curved prismatic glass lens, plastic sides.

Test - Candlepower distribution in three vertical planes intersecting in the center of the unit.

RSTL No. 2121

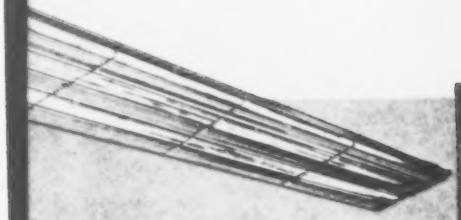




LUMINAIRE DISTRIBUTION DATA

Axes Vertical

fluorescent glass panels



Meticulously en[illegible] by PHOENIX provide these Ex[illegible]

LOWER SUR[illegible]
MORE EVEN [illegible]
MINIMUM [illegible]
LIGHT WEIGHT
STANDARDI[illegible]

ETL Officially Tested

Only the finest select crystal glass is used in these new popular-priced fluorescent panels — achieving a new "high" in economical, non-glare illumination. Note from the ETL reports how glare is minimized, how surface brightness is far below average, and how maximum ideal light distribution is provided—a flood of even, restful, glareless lighting for better seeing.

Never any harsh, blinding light . . . but a constant "gentle glow" with these new Phoenix Glass panels. The meticulously angled glass grooves eclipse shadows . . . cut glare to an absolute minimum. High light interception, especially in the curved lens panel, provides maximum light utilization, and to little glare as possible reaches critical areas due to corrective action of the prisms.

These new Phoenix crystal glass panels are very light in weight . . . keep ship-

E.T.L. Report #334927

Ceiling	75%			50%			30%	
Walls	50%	30%	10%	50%	30%	10%	30%	10%
Room Index	Coefficients of Utilization							
J	.27	.22	.18	.26	.22	.18	.21	.18
I	.33	.29	.26	.33	.28	.25	.28	.25
H	.36	.33	.30	.36	.33	.29	.32	.29
G	.40	.36	.33	.39	.36	.32	.34	.32
F	.42	.39	.35	.41	.37	.35	.37	.35
E	.46	.43	.39	.45	.42	.39	.41	.39
D	.49	.47	.44	.48	.46	.44	.45	.43
C	.51	.49	.46	.50	.47	.46	.47	.45
B	.54	.52	.50	.52	.50	.49	.50	.48
A	.56	.53	.51	.54	.52	.50	.51	.50

Brightness Readings in Footlamberts

Angles	0°	20°	30°	35°	40°	45°	20°L	30°L	40°L	45°L	G	J
Footlamberts	357	543	1085	1312	1446	1539	497	613	1130	1267	1539	1539

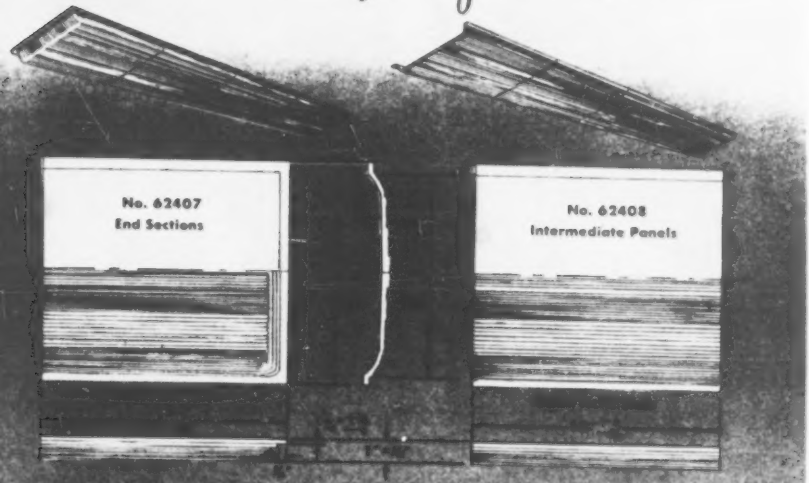
E.T.L. Report #335016

Ceiling	75%			50%			30%	
Walls	50%	30%	10%	50%	30%	10%	30%	10%
Room Index	Coefficients of Utilization							
J	.23	.19	.16	.23	.19	.16	.18	.16
I	.29	.25	.22	.29	.25	.22	.24	.22
H	.32	.28	.26	.31	.28	.26	.28	.25
G	.35	.31	.28	.34	.31	.28	.30	.28
F	.37	.34	.31	.37	.33	.30	.32	.30
E	.41	.38	.36	.39	.37	.34	.36	.34
D	.44	.41	.38	.43	.41	.38	.40	.38
C	.46	.43	.41	.44	.42	.40	.41	.40
B	.48	.46	.44	.47	.45	.43	.44	.43
A	.49	.48	.46	.48	.46	.45	.45	.44

Brightness Readings in Footlamberts

Angles	0°	20°	30°	35°	40°	45°	20°L	30°L	40°L	45°L	G	J
Footlamberts	724	763	1350	1538	1719	1869	633	900	1356	1448	1672	1672

Specifications



...ly angled grooves in these new ... fluorescent panels are the result of ...ully engineered design given the light ...ctral heat control to cut down glare and pro... low surface brightness. Note the curved ...ove pattern—"geometric-gauged" to pro... the most efficient lighting distribution ...e possible in a fluorescent fixture.

SPECIFICATIONS:

INTERMEDIATE PANELS—No. 62408
15" long x 11" wide x 1" deep

END PANELS—No. 62407
11¼" long x 11" wide x 1" deep

- FOR STANDARD 48" fixtures
- BUTT-TOGETHER SNUGLY FOR ZERO LIGHT SEEPAGE
- END GROOVES SLIDE INTO STANDARD FIXTURE TROUGHS

APPLICATIONS:

Ideal for all purpose use—for standard indoor illumination in schools, store-rooms, stables, auditoriums, offices, drafting rooms, banks, libraries, warehouses, and general commercial installations.

PACKED:

Standard Phoenix Packing: Four to carton, weighing twelve pounds.

...E PHOENIX GLASS COMPANY, MONACA, PA.

...W YORK—*Chrysler Building*
...R. Hornbergh—J. C. Lewis

DALLAS—3921 Fairmont
John L. Hancock

...—E. C. Flanagan

LOS ANGELES—*Architects Building*
Robert G. Knapp

WINNIPEG—*Canada*
H. D. Luther
356 Main Street

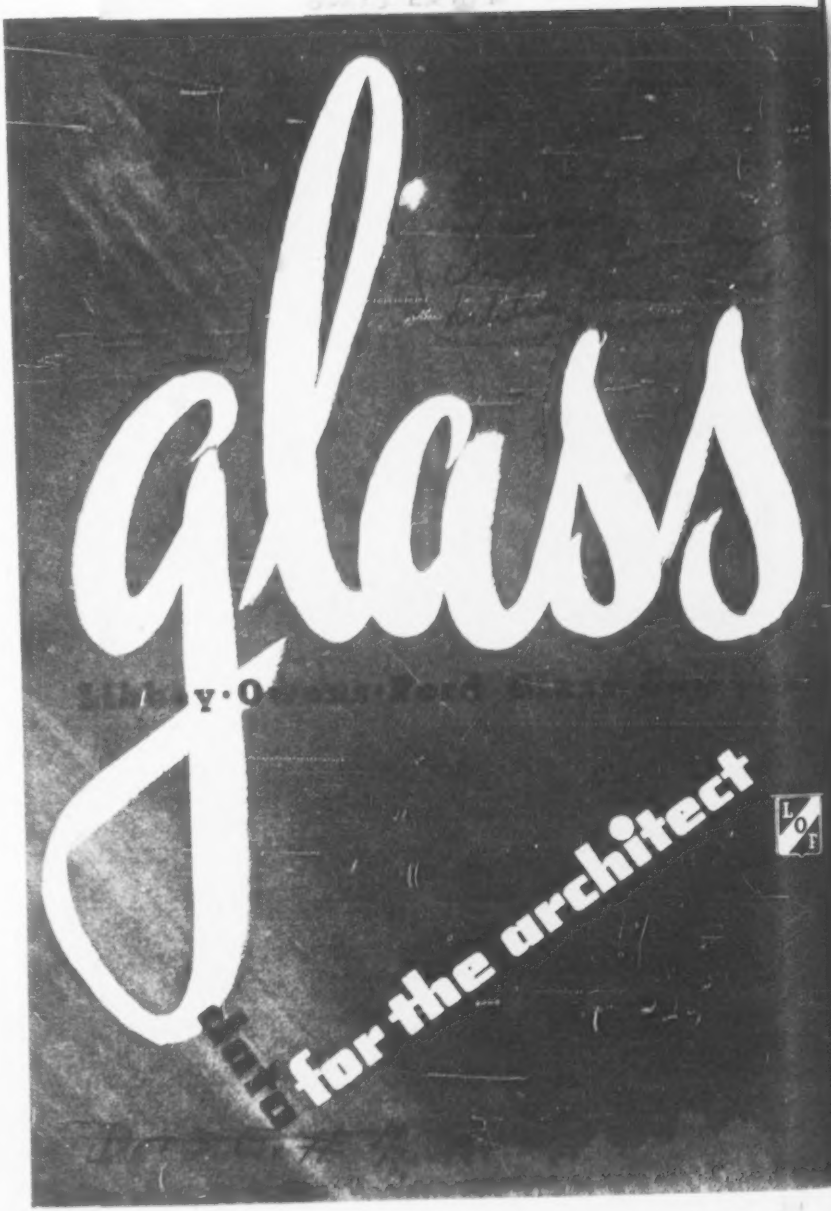
CHICAGO—*Merchandise Mart*
Russell L. Teat—W. H. Martin

ATLANTA—*Bona Allen Building*
Walter F. Nelson Agency.

EXPORT SALES: Longguth-Olson Company, Inc., 11 Park Place, New York City

593

Defendant's Exhibit 4



L-O-F products and services

[illegible] is one of the world's largest manufacturers of flat glass. Its many [illegible] and sales offices are centered in principal cities listed on Page [illegible] of this catalog. [illegible] with manufacturing plants at [illegible] Toledo, Ohio, and Clarksburg, W. Va.

Libbey-Owens-Ford Glass Company manufactures and markets the products listed and pictured in this section. Its engineers, construction engineers and builders will be glad to consult Libbey-Owens-Ford on any matter pertaining to the design and installation of the many types of window, plate and ornamental glass made in quantity. The company maintains its Libbey-Owens-Ford Research Laboratories for the purpose of developing new and improved products.

Libbey-Owens-Ford products for building purposes are sold and installed by approved glass distributors and dealers.

[illegible] manufactured and marketed by Libbey-Owens-Ford are covered according to the index below.

	Page
L-O-F Polished Plate Glass	3
L-O-F *Color Tone*® Polished Plate Glass	4
L-O-F Colored Polished Plate Glass	4
L-O-F Polished Plate Glass for Mirrors	5
L-O-F Transparent Mirrors	5
L-O-F *Thermopane*®	6, 7, 8
L-O-F Window Glass	10
L-O-F *Tuftflex*® Tempered Polished Plate Glass	11
L-O-F Heat Absorbing Polished Plate Glass	11
L-O-F Decorative Glass	11
L-O-F Bent Glass	11
L-O-F Hy-Test Safety Glass	11
L-O-F *Luxfer*® — Ask for catalog No. V-126 or see it in Sweet's File for Architects, File 11	
L-O-F *Glasteel*® — Ask for catalog No. V-126 or see it in Sweet's File for Architects, File 11	
L-O-F *Tuftflex*® Glass Doors — Ask for catalog No. DF-1 or see it in Sweet's File for Architects, File 11	

[illegible] of glass manufactured by the Blue Ridge Glass Corp., Kingsport, Tenn., are sold by Libbey-Owens-Ford Glass Company through leading glass distributors throughout the United States.

	Page
Blue Ridge Patterned and Wire Glass	13, 15
Five Leading Blue Ridge Patterns	16, 17
Blue Ridge Wire Glass	17
Practical Patterned Glass for Varied Industrial Requirements	18, 19
Blue Ridge Ask-It Heat Absorbing and Glare Reducing Glass	20, 21, 22
Blue Ridge Sextet Patterned Glass	23
L-O-F Distributors	24

[illegible]

[illegible]

[illegible]

L·O·F polished plate glass

description

A transparent glass made by grinding and polishing the two surfaces of a glass blank with the object of making them flat and parallel and providing clear vision with minimum distortion.

qualities

Silvering and mirror glazing quality polished plate glass is used for the finest mirrors and for high quality glazing in residences.

Glazing quality polished plate glass is used for general glazing purposes.

uses

¼" to ⅜" Small panes, leaded lights, railway coaches, mirrors, etc.

½" Windows of public and office buildings, residences and apartment buildings, storefronts, show cases, street cars, railway coaches, shelving, table and desk tops, large mirrors, etc.

⅝" Partlights, long shelves, glass furniture, background for decorations, etc.

¾" to 1½" Floor, deck and partlights on ships, aquarium tanks, glass furniture, table and desk tops, etc.

Color Clear™ polished plate glass

Exceptionally clear and colorless, this L·O·F product does not detract from the true color of objects or merchandise behind it. Its quality is equivalent to that of regular polished plate glass.

Color Clear polished plate glass is ideal for Picture Windows, commercial refrigerator cases and mirrors.

Tuf-flex tempered *Color Clear* polished plate glass (page 11) is supplied in ¼" thickness.

colored polished plate glass

Libbey-Owens-Ford produces polished plate glass in the following colors: standard blue, medium blue and peach. Coloring is uniformly controlled so these glasses can be used for such glazing purposes as Picture Windows. They are also highly recommended for mirror and decorative applications. Colored polished plate glass is furnished in quality equivalent to that of regular polished plate glass.

Tuf-flex tempered colored polished plate glass (page 11) is ¼" thick.

suggested specifications

Plate glass shall be Libbey-Owens-Ford polished plate glass and shall be of [ ] quality, and [ ] thickness in accordance with Federal Specification DD-G-451.

edge finishing and special work

All types of flat glass may have their edges finished in various ways. The standard edge finishes are clean cut and swiped (clean cut and seamed), ground and seamed, flat ground, flat polished, bullnose polished, rounded polished, semi-round or pencil polished, mitered edges ground or polished, beveled edges ground or polished. Glass may be cut to size or to simple shapes with a glass cutter, and finished with abrasive belts and grinding and polishing wheels. Holes may be drilled with hand or machine drills. Notches may be cut with a drill and glass cutter in combination. In cutting holes or notches, care should be taken not to exceed safe limits of glass. Notches are well to avoid where possible. Cut edges should be used only where edges are to be covered or protected by molding; abutting edges should be flat ground and exposed edges polished. Grooved or polished, mitered or rounded grooves, depressions for hand holes, pan grooves, etc. may be wheel cut into surface of glass.

Polished plate glass can be bent to specification.

chart for specifying L·O·F polished plate glass

Nominal Thickness	Thickness Tolerance	Weight per sq. ft.	Standard Maximum Width and Length	Maximum Size Obtainable	Approx. Weight Per Box Sq. Ft.
Transparent					
¼"	± .030"	3.25 lbs.	120" x 240"	130" x 240"	780
⅜"	± .040"	4.88 lbs.	120" x 240"	130" x 240"	780
½"	± .050"	6.50 lbs.	120" x 240"	130" x 240"	780
⅝"	± .060"	8.13 lbs.	120" x 240"	130" x 240"	780
¾"	± .070"	9.75 lbs.	120" x 240"	130" x 240"	780
1"	± .080"	13.00 lbs.	120" x 240"	130" x 240"	780
1¼"	± .090"	16.25 lbs.	120" x 240"	130" x 240"	780
1½"	± .100"	19.50 lbs.	120" x 240"	130" x 240"	780
Color Clear™					
¼"	± .030"	3.25 lbs.	120" x 240"	130" x 240"	780
Colors:					
Standard Blue	± .030"	3.25 lbs.	120" x 240"	130" x 240"	780
Medium Blue	± .030"	3.25 lbs.	120" x 240"	130" x 240"	780
Peach	± .030"	3.25 lbs.	120" x 240"	130" x 240"	780

Modern Visual Front of polished plate glass and Tuf-flex® tempered plate glass doors enables this ladies ready-to-wear store in Abilene, Texas, to display its merchandise day and night. Hughes and Pfeiffer, Architects.

L·O·F polished plate glass for mirrors

description

L·O·F Polished Plate Glass, because of its clearness and flatness and minimum of imperfections, is ideal for the manufacture of all types of quality mirrors.

Libbey-Owens-Ford Glass Company does not manufacture and sell chemically deposited mirrors for architectural purposes, but supplies polished plate glass to many of the leading mirror manufacturers.

uses

Mirrors are playing an increasingly important part in modern decoration and design. Architects and designers have found that mirrors bring increased light, beauty, sparkle and spaciousness into residences, hotels, apartment houses and public buildings.

A recent use of mirrors is to double the apparent size of a room or space by facing one wall or two adjoining walls with large mirror sections attached with no ties or mastic. For successful illusion the room must be designed as a half or a quarter of a room so that important features occur at the intersection of mirror-to-wall, mirror-to-ceiling or mirror-to-mirror.

Circular mirrors for dining rooms, fireplace-facing mirrors for living rooms, full length polished plate glass mirrors for bedrooms and dressing rooms, built-in mirrors for smart powder rooms—all aid in introducing charm and dignity into modern homes.

Commercial uses for mirrors are wide and varied. In automotive, department stores and showrooms the large areas of unbroken surfaces for background effects, triple mirrors in clothing sections, overhead mirrors for decorative purposes. Mirrored walls and ceilings are used extensively in bars, restaurants, clubs, theaters, etc., and add decorative beauty and spaciousness where room is limited.

size limitations

When facing wall areas with large mirror sections, it is generally advisable to keep the size of the sections within 6 x 12 feet, although larger dimensions can be furnished for special conditions. Larger wall areas may also be covered with a series of adjacent mirrors.

qualities

Mirrors are graded according to the quality of polished plate glass used. "A" Silvering Quality is used only for the finest mirrors. No. 1 Mirror Glazing Quality is used for all types of selected mirrors. No. 2 Glazing Quality is used for all other polished plate glass mirrors which are termed "commercial" mirrors.

These standards correspond to those established by the Department of Commerce through the National Bureau of Standards as Commercial Standard CS27-36.

Specify L·O·F Polished Plate Glass mirrors to insure the finest glass quality.

Below: This is a view of an ordinary kitchen in a home near Cleveland. A blank wall at the end facing the camera creates a definite but limiting "end" of the room.

Above: This is a view of the same kitchen after large polished plate mirrors had been installed. Note that the room seems to be much larger than in the view at the left.

5:34

L·O·F transparent mirrors

description

Durability and permanence are outstanding qualities of L·O·F Transparent Mirrors—a new L·O·F product using evaporated chromium alloy for "One-Way Mirror" installations.

With a light transmission of approximately 8%, and a light reflection from the mirrored side of about 50%, the specially treated polished plate glass when properly installed serves as a mirror from the front, but is transparent when viewed from the back. For example:

When an L·O·F Transparent Mirror is installed between two rooms one of which is brightly lighted and the other dimly lighted, an observer in the dark room can see into the lighted one, but the glass has the appearance of an opaque mirror in the illuminated room. The perfection of the performance is governed by the difference in brightness between the two rooms. The mirrored side should be installed toward the room into which a view is desired.

uses

The following suggested uses for L·O·F Transparent Mirrors are a few of many possible applications:

In residence entrance doors, hospital observation windows (particularly psychiatric), show windows, nursery doors in residences, instrument manufacturing (used in cameras and other scientific instruments), night clubs and taverns, security windows in government offices, banks, post offices, FBI offices, police departments, private offices, factories and institutions, and colleges and universities (psychology departments). The mirrors also are suitable for novel advertising signs and show windows.

durability

L·O·F Transparent Mirrors have been thoroughly tested in our laboratories and, wherever used, have been found to be satisfactory. Thousands were used in instruments during the war. They are highly resistant to the normal action of weathering, cleaning, handling and glazing compounds encountered in commercial glazing installations.

uniformity

L·O·F Transparent Mirrors are exceptionally uniform in quality. Such variation as may exist is not apparent to the normal eye in commercial installation.

A bare spot $\frac{1}{4}$" x 1" at the top and bottom edges of all transparent mirror stock sheets will be found. This is inherent in the manufacturing process and should be concealed in the installation.

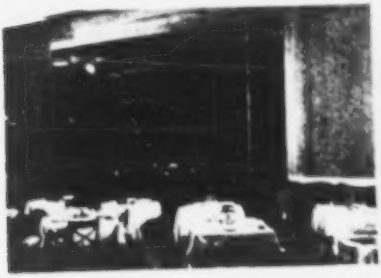
advantages

The new L·O·F Transparent Mirror, coated with evaporated chromium alloy, has many advantages over the chemically deposited transparent mirrors now on the market. Among its merits are permanence of coating and fidelity of color of objects viewed through the mirror.

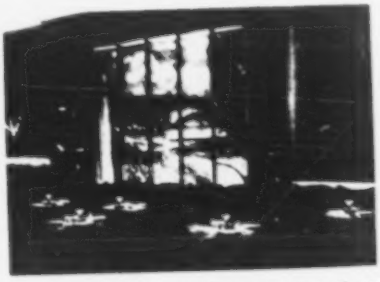
sizes

L·O·F Transparent Mirrors are furnished in polished plate glass and in any size up to a maximum of 50" x 60".

Note: Other thicknesses of glass and other types of evaporated metal films will be considered upon application.



A dining room in the Mayflower Hotel, Akron, Ohio, is a pleasant place. Twenty four L·O·F transparent mirrors at one side of the room offer brightness, a feeling of spaciousness and an opportunity for diners to view the floor show without turning.



This is a photo of the same L·O·F transparent mirrors that are pictured at the left. Here, however, the floor show has been concluded and a flick of a switch has turned on lights behind the mirrors, making them a window which reveals a mural landscape.

L·O·F Thermopane

REG. U.S. PAT. OFF.

scription

ermopane is the first successful, mass-produced, in-ating unit of its kind for general use. It is a factory-ll transparent glass unit composed of two or more ets of glass separated by ¼" or ½" of dehydrated ture air, hermetically sealed around the edges at factory with a metal-to-glass bond.

anufacture

e glass is specially washed before the special Bonder-te Seal® is applied. The air hermetically sealed mod-rmopane units is scientifically cleaned and dried o-F Thermopane can be furnished in squares or rec-gles. Standard Sizes (pages 8 and 9) generally are d.

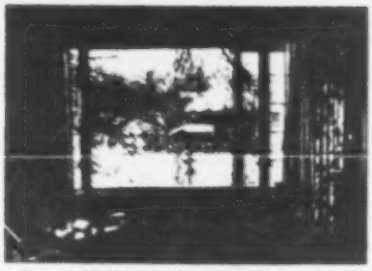
elve features

mpared with single glass glazing, the important fea-es of Thermopane are: Reduces heat loss through s—saves fuel. Reduces downdrafts at windows. Is a metal-to-glass welded insulating unit. vides the benefits of storm sash without the bother. Offers year-round double glass protection. Is table for all window openings. Increases efficiency air conditioning equipment. Reduces possibility condensation. Enables maintenance of uniform mperatures. Reduces transmission of noise. vides day-to-day health and comfort benefits. nstalled in a sash similarly to a single pane.

es

ible glass Thermopane is practical for glazing wood metal windows and doors and window walls in homes, rtments, schools, hospitals and other structures ring heating, air conditioning or noise reduction. re higher humidities are encountered, triple glass rmopane is recommended.

This is a cutaway view of double Thermopane. The metal-to-glass bond seals the edges of the two panes of glass. This built-in insulation means that a home could have 111 square feet of double Thermopane and lose no more heat than a similar home would lose with 63 square feet of single glazing. Thermopane permits the influx of a large amount of solar heat without a prohibitive compensating loss. By combining various types of heat-absorbing, patterned glass and clear glass, the amount of light transmission may be controlled. All this is desirable.



This attractive Thermopane Picture Window brings cheer into this suburban home near New Philadelphia, Ohio.

heat loss transmission

Thermopane units provide a high resistance to heat flow, varying with the number of panes and the thickness of the air space. In summer *Thermopane*'s low heat transmission coefficient reduces the load on air conditioning systems. In winter it saves heat. The greater efficiency of *Thermopane* compared with single glazing makes it possible to use larger windows and keep the cost of fuel constant.

Because *Thermopane* is an insulating unit, it reduces the coefficient of heat transfer. This increases the temperature of the *Thermopane* surface facing the room side, thereby reducing "window-pane chills" and making living conditions more healthful and comfortable.

The insulating factor allows much more latitude in room design. Because the glass areas in single glazings cause a "cold spot" in the room, radiators or warm air grills are usually located near or under windows. With the warmer window temperature when *Thermopane* is used, there is more flexibility in planning heating outlets.

heat transmission table

The over-all heat transmission coefficient U varies with the ranges of temperature at which the coefficient is determined. For most practical heat loss calculations, coefficient U can be the value determined at ten degrees outside temperature, 70 degrees inside temperature, 15 mph outside air velocity, 0.25 mph average inside air velocity. The following table gives such values from actual tests with glass sizes 30" x 30".

Number of Panes	Glass Thickness	U Value Air Space		
		None	¼"	½"
Single Glass	¼"	1.16		
	⅛"	1.13		
Double *Thermopane* (one air space)	⅛" or ¼"		.65	.58
Triple *Thermopane* (two air spaces)	⅛"		.42	

536

the windowpane that insulates

glazing details

It is extremely important to remember that *Thermopane* is a factory-fabricated unit and, once made to specifications, its dimensions cannot be changed at point of use. Proper glazing clearances must be allowed on all *Thermopane* units, as well as sufficient rabbet depth, so that the metal seal does not show. The drawings and chart below give this information.

Glass Thickness						
Symbol and Explanation	B	A* Sheet, Plate, Polished		C Plate, Patterned		
Glass Sizes	under 80 united inches	under 80 united inches	from 80 to 120 united inches	under 80 united inches	over 80 united inches	over 120 united inches
A—Glazing compound Bed Width	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
B—Glazing Clearance (all edges)	1/8"	1/8"	3/16"	1/8"	1/8"	1/4"
C—Metalized Edge Depth	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
D—Total Rabbet Depth B+C	3/8"	3/8"	7/16"	3/8"	3/8"	1/2"

*Allowance made for dimensional tolerance

glazing instructions

The following instructions must be observed for the successful installation of *Thermopane*:

1. Check sash openings for squareness and full unit edge clearance.
2. Use a good, knife-grade, non-hardening glazing compound, free from corrosive materials.
3. Have glazing compound soft, and completely bed the back stop with it before inserting unit.
4. Press *Thermopane* in evenly. Do not force so as to twist the unit.
5. Do not nip corners. This breaks the seal.
6. Allow equal clearance on all edges between glass and sash.
7. Point up all edge voids between glass and sash.
8. Face all edges with glazing compound.
9. If wood stops or metal angles are used, do not exert undue pressure so that glazing compound is squeezed out, or unit is under strain at nail or screw points.
10. *Thermopane* must have a sufficient bed of glazing compound so that neither wood nor metal comes in contact with the glass at any point.*
11. Lights over 80 united inches must be supported on soft surface setting blocks. (Soft rot-proof wood, soft lead, or steel or aluminum blocks with soft lead tops.) The width of the setting block must be the same as the thickness of the *Thermopane* unit.
12. Setting blocks should be located in from each corner and centered a distance of 1/4 the length of the light.
13. *Thermopane* units constructed with one light of Heat Absorbing Plate or Blue Ridge Akbo must be glazed with the Heat Absorbing Glass to the outside.
14. These glazing instructions are packed with each *Thermopane* shipment and our warranty does not apply unless they are followed.

*Exception: Approved metal storefront construction.

how to install *Thermopane* step by step

1. Be sure opening is square so that unit will not bind. Bed back stop with a good, knife-grade, non-hardening glazing compound free of corrosive agents before inserting *Thermopane*.

2. Place unit on approved setting blocks located in from each corner and centered 1/4 the length of the unit. Press in evenly. Allow equal clearance between edges of the glass and sash.

3. Fill the voids on all edges with non-hardening glazing compound to prevent infiltration of air and water leakage. Do not use blocks of any kind at sides or top of *Thermopane*.

4. Cover perimeter with non-hardening glazing compound before setting the face stops. To avoid pressure, do not [illegible] when sash is rabbeted to receive

L·O·F *Thermopane* continued

double Thermopane standard sizes

Standard sizes for double *Thermopane* were developed by Libbey-Owens-Ford in cooperation with leading manufacturers of wood and steel sash in answer to requests from many architects and designers. There are numerous advantages to specifying standard *Thermopane* sizes. Manufacturers of wood sash have developed standard Picture Window frames and sash units using them. Glass distributors and wholesale sash and door jobbers carry warehouse stocks of these units, thus making *Thermopane* readily available. Architects can incorporate standard sizes in their specifications. Replacements and duplications of orders will be handled more quickly.

Standard *Thermopane* units are being manufactured in a wide range of sizes, readily adaptable by architects for new construction and remodeling.

All *Thermopane* units can be installed horizontally or vertically.

window walls and picture windows

Thermopane is ideally suited for wall sections where complete visibility is desired such as in solar houses and daylight engineered buildings. Modern design emphasis has created an opportunity for architects to specify window wall construction using *Thermopane* in standard sizes.

Many sizes of *Thermopane* are used as Picture Windows. The nine sizes listed below generally are used in window walls.

Window Wall **Picture Window**

Width	Height
48"	x 66"
56½"	x 66"
48"	x 72"
64½"	x 66"
84"	x 66"
84"	x 72"
72½"	x 66"
96"	x 66"
96"	x 72"

standard wood picture window units with flanking double hung windows

Picture Window Rough Opening (Without double hung unit) Width	Height
4'-6"	x 4'-5"
5'-0"	x 4'-5"
5'-6"	x 4'-5"
6'-0"	x 4'-5"
6'-6"	x 4'-5"
7'-0"	x 4'-5"
7'-6"	x 4'-5"
8'-0"	x 4'-5"
8'-6"	x 4'-5"
9'-0"	x 4'-5"
9'-6"	x 4'-5"
10'-0"	x 4'-5"
10'-6"	x 4'-5"
11'-0"	x 4'-5"
11'-6"	x 4'-5"
12'-0"	x 4'-5"

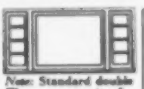
Note: Standard double *Thermopane* units for above are composed of two ¼" panes of polished plate glass with ½" air space.

Picture Window Glass Size Width	Height
48½"	x 66"
56½"	x 66½"
72½"	x 66"
84½"	x 66"
96½"	x 66"
108½"	x 66"
120½"	x 66"
72½"	x 66"
84½"	x 66"
96½"	x 66"
108½"	x 66"
120½"	x 66"
72½"	x 66"

Note: Window openings will vary according to individual sash manufacturer's specifications. Therefore, manufacturers should be contacted for full information regarding their units.

standard wood picture window units with flanking casements

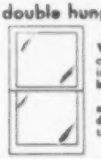
Window Opening (Including the Casements) Width	Height
6'-6½"	x 5'-2⅛"
6'-6½"	x 6'-0⅛"
7'-1"	x 6'-0⅛"
7'-6½"	x 6'-0⅛"
8'-0"	x 6'-0⅛"
8'-6½"	x 6'-0⅛"
9'-1"	x 6'-0⅛"
9'-6½"	x 6'-0⅛"



Note: Standard double *Thermopane* units for above are composed of two ¼" panes of polished plate glass with ½" air space.

Picture Window Glass Size Width	Height
56½"	x 36"
56½"	x 48½"
56½"	x 60½"
72"	x 60½"
56½"	x 66½"
84½"	x 66½"
72"	x 66½"

double hung windows



Wood sash manufacturers offer check rail double hung windows, in both two-light and four-light horizontal sash as illustrated.

The complete range of standard sizes for double *Thermopane* double hung units is shown in the table below.

Window Opening Width	Height	Glass Sizes 2-Light	4-Light
2'-6"	x 4'-5"	20" x 32"	20" x 10½"
2'-6"	x 5'-2"	20" x 38"	20" x 10½"
2'-6"	x 6'-6"	20" x 54"	20" x 11½"
3'-0"	x 4'-5"	25" x 32"	25" x 10½"
3'-0"	x 5'-2"	25" x 38"	25" x 11½"
3'-0"	x 6'-6"	25" x 54"	25" x 11½"
3'-6"	x 4'-5"	30" x 32"	30" x 10½"
3'-6"	x 5'-2"	30" x 38"	30" x 11½"
3'-6"	x 6'-6"	30" x 54"	30" x 11½"
4'-0"	x 4'-5"	36" x 32"	36" x 10½"
4'-0"	x 5'-2"	36" x 38"	36" x 11½"
4'-0"	x 6'-6"	36" x 54"	36" x 11½"
4'-6"	x 4'-5"	42" x 32"	42" x 10½"
4'-6"	x 5'-2"	42" x 38"	42" x 11½"
4'-6"	x 6'-6"	42" x 54"	42" x 11½"
5'-0"	x 4'-5"	48" x 32"	48" x 10½"
5'-0"	x 5'-2"	48" x 38"	48" x 11½"
5'-0"	x 6'-6"	48" x 54"	48" x 11½"
6'-0"	x 5'-2"	60" x 38"	60" x 11½"
6'-0"	x 6'-6"	60" x 54"	60" x 11½"

Double Thermopane, manufactured with two lights of Double Strength "A" quality L-O-F Window Glass or ¼" Polished Plate, with ¼" air space, is standard for double hung windows.

aluminum picture window units with flanking double hung windows

Aluminum sash manufacturers have developed units which will use *Thermopane* standard sizes either for separate Picture Windows or for Picture Windows with flanking double hung aluminum sash. One manufacturer of aluminum sash has developed a standard Picture Window unit which can be used as a single sash or with flanking double hung stock windows. For the latter, the following standard glass sizes have been adopted:

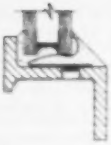
Picture Window Rough Opening Width	Height
4'-6"	x 6'-0"
5'-0"	x 6'-0"
5'-6"	x 6'-0"
6'-0"	x 6'-0"
6'-6"	x 6'-0"

Note: Standard double *Thermopane* units for above are composed of two ¼" panes of polished plate glass with ½" air space.

Picture Window Glass Size Width	Height
66½"	x 52⅛"
78½"	x 52⅛"
90½"	x 52⅛"
66½"	x 66½"
78½"	x 66½"
90½"	x 66½"
102½"	x 66½"
78½"	x 66½"

standard steel sash standard sizes

Double *Thermopane*, manufactured with two lights of Double Strength "A" quality L-O-F Window Glass or $\frac{1}{8}$ inch L-O-F Polished Plate Glass, both with $\frac{1}{4}$ inch air space, is standard for many residential steel casement windows. For satisfactory glazing of *Thermopane* in steel sash, special clips (see illustration) have been developed by Libbey-Owens-Ford. For detailed information, contact the nearest Libbey-Owens-Ford district office.



standard specifications

All insulating glass shall be *Thermopane* of sizes indicated on the drawings and composed of (two) (three) ( ) panes of glass thick, hermetically sealed with a metal-to-glass bond and separated by a ($\frac{1}{4}$") or ($\frac{1}{2}$") dehydrated air space, as manufactured by Libbey-Owens-Ford Glass Company, Toledo, Ohio, and installed according to manufacturer's instructions.

double Thermopane types of glass and sizes

Type of Glass	Min. Size ($\frac{1}{4}$" or $\frac{1}{2}$" Air Space	Maximum Size With $\frac{1}{4}$" Air Space	Maximum Size With $\frac{1}{2}$" Air Space	Thickness Range: $\frac{1}{4}$" Air Space	Thickness Range: $\frac{1}{2}$" Air Space	Dimensional Tolerance	Approx. Net Weight per Sq. Ft.
D.S.A. $\frac{1}{8}$" Blue Ridge Patterned $\frac{1}{8}$" Blue Ridge Akla (Max. width 28") $\frac{1}{8}$" Polished Plate $\frac{1}{8}$" Heat Absorbing Plate	8" x 8"	52" Max. Width 76" Max. Length Length not to exceed 4 times width Total Area 1400 sq. in.	24" Max. Width 76" Max. Length Length not to exceed 4 times width Total Area 1400 sq. in.	$\frac{1}{4}$" to $\frac{1}{4}$"	$\frac{1}{4}$" to $\frac{1}{4}$"	8" to 32" wide to 48" long ± $\frac{1}{4}$" 48" to 76" long + $\frac{1}{4}$" − $\frac{1}{4}$"	3½ lbs.
$\frac{1}{4}$" Sheet	8" x 8"	42" Max. Width 72" Max. Length	42" Max. Width 72" Max. Length	$\frac{1}{4}$" to $\frac{1}{4}$"	$\frac{1}{2}$" to $\frac{1}{2}$"		5 lbs.
$\frac{1}{4}$" Polished Plate	8" x 8"	98" Max. Width 132" Max. Length Total Area 9800 sq. in.	98" Max. Width 132" Max. Length Total Area 9800 sq. in.	$\frac{1}{4}$" to $\frac{1}{2}$"	$\frac{1}{2}$" to 1 $\frac{1}{4}$"	8" to 36" wide + $\frac{1}{4}$" − $\frac{1}{4}$" 36" to 98" wide + $\frac{1}{4}$" − $\frac{1}{4}$"	7 lbs.
$\frac{1}{4}$" Heat Absorbing Plate	8" x 8"	68" Max. Width 100" Max. Length Total Area 3600 sq. in.	68" Max. Width 100" Max. Length Total Area 3600 sq. in.				
$\frac{1}{8}$" Blue Ridge Patterned $\frac{1}{8}$" Blue Ridge Akla (Max. width 28")	8" x 8"	68" Max. Width 100" Max. Length Total Area 6800 sq. in.	68" Max. Width 100" Max. Length Total Area 6800 sq. in.	$\frac{1}{4}$" to $\frac{1}{4}$"	$\frac{1}{4}$" to $\frac{1}{4}$"		6¼ lbs.
Tuf-flex ($\frac{1}{4}$") Polished Plate and Heat Absorbing Plate	8" x 8"	80" x 48"	80" x 48"	$\frac{1}{4}$" to $\frac{1}{2}$"	$\frac{1}{2}$" to 1 $\frac{1}{4}$"		7 lbs.

For building entrances, store fronts, etc., where wind loads are unusually high, $\frac{1}{4}$" air space only.
For Data Card's Technical Sheets on *Thermopane* and *Thermopane* Installation Details for Wood Sash, write to your nearest L-O-F District Office.

THERMOPANE WARRANTY

L·O·F window glass

description

L-O-F Flat Drawn Sheet Glass—representing the result of more than 30 years of quality glass manufacturing—is exceptionally transparent and has a natural fire-finished surface. It is relatively free of distortion. L-O-F uses its own Flat Drawn Process in manufacturing sheet glass. The result is a better annealed window glass that is less subject to breakage.

classification

Libbey-Owens-Ford Sheet Glass is classified on the basis of thickness as Window, Heavy Sheet and Picture Glass.

Window Glass is supplied in two thicknesses:

1. Single Strength, varying from 10 to 11.8 lights per inch and identified by a *red* label.
2. Double Strength, varying from 7.5 to 8.7 lights per inch, and identified by a *blue* label.

Window Glass is supplied in four standard qualities: "AA" Specially selected glass for high grade work. "A" Select glass of superior glazing quality. "B" Suitable for general glazing purposes.

Greenhouse Glass of special quality available in double strength only in sizes 16" x 18", 16" x 24" and 18" x 20".

Heavy Sheet Glass is supplied in thicknesses of $\frac{7}{32}$" and $\frac{1}{4}$", and in qualities "AA", "A", and "B".

Picture Glass is furnished in three standard thicknesses listed in the chart to the right, and in "AA", "A", and "B" qualities.

uses

Libbey-Owens-Ford Sheet Glass for glazing windows, doors and storm sash in homes, apartments and other types of buildings; cabinet fronts and shelving.

Libbey-Owens-Ford Heavy Sheet Glass for glazing windows and doors where greater strength is required but where slight distortion is not objectionable; shelving; display cases; window ventilators and furniture tops.

Libbey-Owens-Ford Picture Glass for covering pictures, photographs, maps and prints; lantern slides; novelties and instrument dials.

suggested specifications

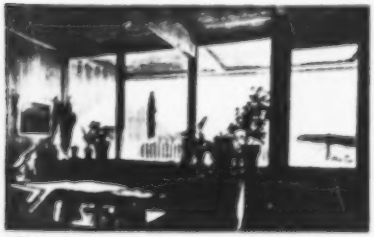
All sheet glass shall be Libbey-Owens-Ford Flat Drawn ("A") Quality (Double Strength). Each light shall bear the identifying L-O-F label.

packing

Shipped in soundly-constructed boxes, Libbey-Owens-Ford Sheet Glass is given neat, clean and practically moisture-proof protection.

chart for specifying

Classification	Quality	Thickness in Inches	Approx. Weight Lbs. per Sq. Ft.	Maximum Size Furnished
Window Glass				
Single Strength	AA A B	085-100	13-16	90 united in
Double Strength	AA A B	115-133	26	120 united in
Double Strength	Greenhouse	115-133	26	16" x 18"
				16" x 24"
				18" x 20"
$\frac{7}{32}$" Heavy Sheet	AA A B	187-205	40	50 sq. ft.
$\frac{1}{4}$" Heavy Sheet	AA A B	205-230	45	50 sq. ft.
Picture Glass				
19-21 lbs. per sq. ft.	AA A B	933-933	9 to 11	60 united in
Picture Glass				
15-17 lbs. per sq. ft.	AA A B	668-668	12 to 14	60 united in
Picture Glass				
12-14 lbs. per sq. ft.	AA A B	670-670	15 to 17	60 united in



Where quality window glass is desired, specify Libbey-Owens-Ford as did Architect Victor Hornbostel of Denver.

Libbey-Owens-Ford window glass was specified for this apartment hotel near Chicago. Holabird and Root, Architects.

L·O·F Tuf-flex® tempered polished plate glass

description

Tuf-flex **is tempered polished plate glass made by a process of reheating and sudden cooling, as a result of which the outer surfaces are in a state of high compression while the central portion remains in tension, producing a condition highly resistant to breakage. The *Tuf-flex* process can be applied to both clear and colored polished plate glass.**

properties

Tuf-flex **is approximately three to five times stronger than regular polished plate glass in sustaining loads and resisting fracture due to strain, and approximately five to seven times more resistant to ordinary impact and three times more resistant to thermal shock. It is more resistant to bending stresses than polished plate glass. A piece of ¼" *Tuf-flex* 42" long and 12" wide can be twisted through an angle of 20° without breaking. *Tuf-flex* retains the same appearance, clearness, hardness and coefficient of expansion as regular polished plate glass. When its limit of resistance is reached, *Tuf-flex* does not break like ordinary glass into jagged pieces, but disintegrates into small crystals.**

uses

The greater strength of *Tuf-flex* has resulted in its wide use for visual entrance doors (specific data available in separate catalog No. TF-1 in Sweet's File for Architects, section 15b 1), ship's glazing, steam and oil pressure gauge covers, shelving, furniture, counter tops, show cases, and for enclosures in museums, zoological gardens and aquariums. Its ability to withstand impact makes *Tuf-flex* especially adaptable for balustrades, stair railings, push and kick plates on doors, windows in gymnasiums and sports arenas, and in jails, hospitals and mental institutions. The high resistance of *Tuf-flex* to thermal shock renders it advantageous as lenses for searchlights, floodlights, and spotlights where the heat generated by high intensity lamps would shatter regular glass; for sterilizing ovens, and for peep hole glasses in furnaces and lehrs.

special conditions

Tuf-flex **can be ordered in circles, squares, rectangles and special shapes cut to pattern. It can also be supplied in a variety of edge finishes. However, since it cannot be cut after it is tempered, the exact sizes required must be specified, and intricate designs should be submitted for approval.**

The handsome railing of *Tuf-flex* polished plate glass was installed at the new Chicago ticket office of the Trans-World Airline. Notice that it casts no shadow on the stairs. Architects: Skidmore, Owings and Merrill, Chicago.

guide for specifying L O F Tuf-flex tempered polished plate glass

Kind	Thickness	Min. Width	Max. Size	Thickness Tolerance	Tolerance
Regular Polished Plate Glass	3/16", 7/32", 1/4", 5/16", 3/8", 1/2"	2"	56" x 108"	± .01"	± 1/8"
		2"	68" x 136"	± .02"	± 1/8"
		2"	68" x 144"	± .03"	± 1/8"
		2"	84" x 144"	± .04"	± 1/8"
Color Clear Polished Plate	¼"	2"	84" x 144"	± .05"	± 1/8"
Colored Polished Plate Heat Absorbing Polished Plate	¼"	2"	68" x 72"	± .01"	± 1/8"
	¼"	2"	98" x 72"	± .01"	± 1/8"

Circles and squares are available.

comparative modulus of rupture

Polished Plate Glass	Tuf-flex
Average 6,000 lb. sq. in.	Average 35,000 lb. sq. in.

comparison of impact

Kind of Glass	2 Lb. Steel Ball Natural Height Dropped	11 Lb. Steel Ball Natural Height Dropped
¼" Polished Plate	Average 8 inches	Average 12 inches
¼" Tuf-flex	Average 60 inches	Average 180 inches

resistance to thermal shock

Kind of Glass	Average Difference in temperature between 8" equivalent to thermal failure
¼" Polished Plate	110° F
¼" Tuf-flex	400° F

L·O·F heat absorbing polished plate glass

description

L-O-F Heat Absorbing Polished Plate Glass is a product of special chemical composition, pale bluish green in color, and made to absorb a high percentage of the infrared heat rays of the sun. Part of the absorbed heat is subsequently transferred to the interior, but a considerable portion is given off to the exterior, effecting a net reduction of the solar heat entering through the glass.

qualities

L-O-F Heat Absorbing Polished Plate Glass ¼" thick excludes 25.1% of the total solar radiation; ¼" thick 32.5% as compared with an exclusion of 14.4% afforded by regular plate glass ¼" thick. These figures are based on the assumption of 50% of the reradiation of the absorbed heat in the glass to the interior and 50% to the exterior. This reduction of solar heat transmission will produce a cooler atmosphere inside, resulting in lower initial cost for the air conditioning equipment and reduced cost of operation. L-O-F Heat Absorbing Polished Plate Glass reduces sun glare, and provides light which is restful to the eyes and nerves.

uses

L-O-F Heat Absorbing Polished Plate Glass is particularly suited for glazing the windows of office and apartment buildings, hospitals, schools, factories, and other types of buildings where the exclusion of solar heat is a problem. Merchants whose wares are perishable will find Libbey-Owens-Ford Heat Absorbing Polished Plate Glass beneficial for show windows. Because of its heat absorbing characteristics, this glass helps protect merchandise such as fruits, vegetables, candy, flowers, and other perishables, helps to keep it fresh much longer. It also is useful for windows of stores such as groceries, butcher shops, drug stores and ice cream parlors where refrigerating equipment may necessarily be in line with rays of the sun coming through show windows.

special processing

If desired, L-O-F Heat Absorbing Polished Plate Glass can be supplied in the form of *Tuf-flex* (see page 11). This makes it stronger than polished plate glass and more resistant to impact and thermal shock.

L-O-F Heat Absorbing Polished Plate Glass also can be incorporated as the outside light in *Thermopane* insulating units in sizes not over 25 square feet (see pages 6, 7, 8 and 9) in combination with regular polished plate glass on the inside. This will reduce the solar heat transmission to 90% as much as would occur through a single light of heat absorbing glass, or to 65 to 70% as much as would occur through *Thermopane* manufactured with two lights of clear glass.

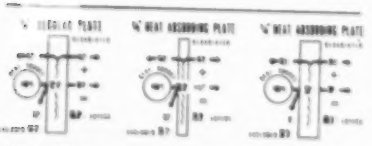
The *Thermopane* arrangement is recommended for year-round insulation, since it most effectively reduces heat loss through windows in winter and heat gain in summer.

suggested specifications

All heat absorbing plate glass shall be L-O-F Heat Absorbing Polished Plate Glass of ( ) thickness as manufactured by Libbey-Owens-Ford Glass Company, Toledo, Ohio.

guide for specifying

Thickness	Thickness Tolerance	Maximum Width and Length	Approx. Weight Lbs. per Sq. Ft.
¼"	± ⅛"	60 inches by 90 inches	1.64
¼"	± ⅛"	25 sq. ft. max. area 100" longest dimension	3.27



(NOTE: The percentage factors shown for solar heat exclusion are comparative only since all assume that the sun rays are normal (perpendicular) to glass and that the absorbed heat energy in reradiated equally on both sides of each glass. Such conditions practically never exist. Reradiation and convection are affected by temperatures inside and out, air flow speeds and many other factors. However, the figures are relative between diagrams and can be of assistance in selecting a glass combination by comparing one glass combination to another.)

Comparative Properties
Libbey-Owens-Ford Heat Absorbing Polished Plate Glass and Regular Polished Plate Glass

	Thickness	Per cent of Transmission	
		Average Daylight	Total Radiation
Regular L-O-F Polished Plate	¼"	88	88
L-O-F Heat Absorbing Polished Plate	¼"	85	67
L-O-F Heat Absorbing Polished Plate	¼"	74	39

L·O·F decoration on glass - bent glass

decoration on Vitrolite, polished plate and Blue Ridge glass.

Decoration on glass has a wide range of possibilities, as suggested by the following processes:

surface sandblast—Uniform sandblasting over all or part of glass, in grades from very slight to complete removal of polished surface.

shaded sandblast—Gradations of shading ranging from natural surface to complete obscuration of polish.

deep sandblast—Decoration cut below surface of glass but without modeling or gradation.

carved sandblast—Cut to various depths below surface of glass for fine bas-relief or intaglio.

shaded and carved sandblast—May be combined in one decoration, achieving various tones with deeper cut accents.

painted (air drying)—Usually on back surface of glass; often used in connection with mirrors.

painted sandblast—Air drying decoration applied to sandblasted portions on face or back.

inlay—Thin glass, in variety of opaque or translucent colors, or silver-backed colored glass is inlaid into *Vitrolite* sandblasted to receive the inlay, or into ½" or thicker plate glass with sandblasted surface.

laminated—Letters or decoration, in silhouette, cut from *Vitrolite* or thin colored glass and cemented to *Vitrolite* or other glass background.

Decoration on glass is executed by expert craftsmen in our glass decorating department from architects' full size details or developed by L·O·F from architects' scale drawings.

Over altar decoration, six feet square, in the Shrine of the Ohio Memorial Forest, Londonville, Ohio. Bostock and Munger, architects. This striking example of fine glass decoration makes use of ¼" plate glass with a sandblasted surface into which pieces of thin, colored, opaque glass and colored mirrored glass are inlaid. The parts of the glass background which show through are insulated on the back in silver and gold and other metallic colors.

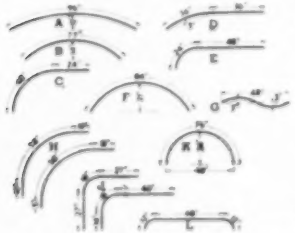
Note: Processes such as hand-on ceramics on polished plate glass, leaded glass windows, acid etching, etc., may be secured through L·O·F dealers or jobbers.

L·O·F bent glass

Most bent glass shapes are produced by causing flat glass to form in a mould by the action of heat and gravity only. It is not a machined product, and is subject to more distortion and wider tolerances than flat polished plate or window glass.

explanation of diagrams

Dimensions on diagrams are to illustrate maximum limits of proportions. Radii of curves may not be less than 6". Radii should be specified to outside surface of glass. Maximum rise of bends J and K must not exceed 36". Depth of G bends not to exceed 1 in 16; example, pane 64", depth 4". Flat portions of bent glass cannot be kept entirely flat where large flat areas are required. It is recommended that flat portions be ordered as separate lights. It is recommended that bent *Vitrolite* panels should not exceed 6 sq. ft. in area for exterior work. For *Vitrolite* or Blue Ridge Glass specify which face of glass is concave or convex. Requirements for bends in glass of greater thicknesses than listed below or for sizes in excess of the maximum dimensions listed should be submitted for consideration.



maximum sizes of bends (in inches)

Bends		Polished Plate Glass			Color Clear Polished Plate		Heat Absorbing Polished Plate	
	Thickness	¼	⅜	½	¼	½	¼	½
	Distance around Bend	60 or 68	70 or 68	110	60	70	60 or 50	90 **
	Length	60 or 50	68 or 70	110	60	100	50 or 50	90 **
	Colored Polished Plate	Sheet Glass			Blue Ridge Green		Vitrolite	
A, B, C, D, E, F, G	Thickness	3/16	7/32	¼	¼	½	¼	½
	Distance around Bend	70	72 or 60	60	60	60 or 50	65 or 60	65
	Length	110	60	60 or 60	60	90 or 60	60 or 60	60
H, J, K, L	Same as schedule shown except that distance around bend may not exceed 70"							
	Same as schedule shown except that maximum distance around bend may not exceed 60" and maximum length may not exceed 72"							

** 25 Sq. Ft. maximum area

BLUE RIDGE patterned and wire glass

Blue Ridge glass embraces a complete range of scientifically designed Patterned and Wire glass, for which Libbey-Owens-Ford is the United States' Sales Agent.

description

Blue Ridge Patterned Glass, which includes more than 20 individual patterns is a flat-rolled, translucent glass in which a distinctive light-controlling geometric or linear design is impressed into one or both surfaces during manufacture. All are semi-transparent, and provide diffused light transmission. Most Blue Ridge patterns can be obtained in Wire Glass for greater resistance to fire hazards.

There are four types of finish available in Blue Ridge Patterned and Wire Glass. These are:

1. *Plain Rolled Fire-Polished* — surfaces as they come from the lehr without further treatment.

2. *Satined finish* — a treatment of one or both sides which imparts a soft, satin-like finish, increasing obscurity and spreading transmitted light uniformly over a wide area. Does not finger mark or collect dust and dirt — is easily cleaned with a dry or damp cloth. Available in all patterns. On one surface, Satined reduces light transmission about 3%; ... both surfaces about 6%.

3. *Frosted finish* — acid-etching of both glass surfaces to improve distribution of transmitted light.

4. *Sandblasted finish* — to increase obscurity and diffusion of transmitted light. Spreads the light in a circular pattern. Sandblasting on one side reduces light transmission about 10%; and, on both sides, from 20 to 30%.

uses

Blue Ridge Patterned Glass is desirable, wherever glazing requirements include high light transmission or diffusion, privacy, and distinctive decoration. Applications include windows, doors, partitions of all kinds, transoms, skylights, decorative panels, cupboard doors, shelving backgrounds, displays, signs and lighting fixtures. Note: For glare-and-heat reduction, see Blue Ridge Ablo glass, pages 20 and 21.

securit process

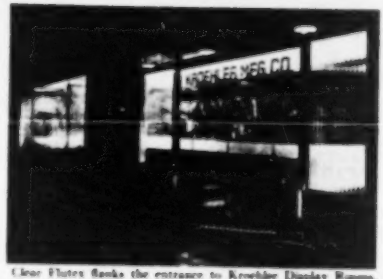
Practically all Blue Ridge Patterns may be *Securitized* (heat-tempered) to increase resistance, to thermal and physical shock. *Securitized* Patterned Glass is safer for, if broken, it disintegrates into small dived particles. Note: *Wire Glass cannot be Securitized*.

suggested specifications

Where Patterned or Polished Wire or Obscure glass is specified herein, or shown on plans, it shall be ( ) inches in thickness and shall be ( ) pattern (specify thickness and pattern desired), and shall be manufactured by the Blue Ridge Glass Corporation.

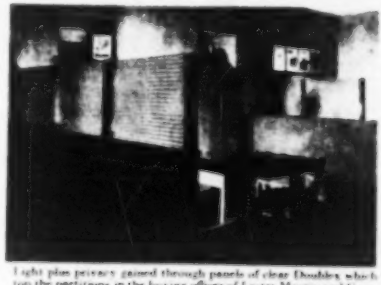
If a surface finish other than plain rolled is desired, the type of surface finish, such as Satined or Frosted, should be specified.

The Standard Satined or Frosted Glare Reducing Finish Specification is: "Where Patterned or Obscure glass is specified herein or shown on plans, it shall be ( ) inches in thickness and shall be ( ) pattern Satined (one surface or its surfaces), or have Frosted Glare Reducing finish on both surfaces, and each light shall bear the label of Blue Ridge Glass Corporation."

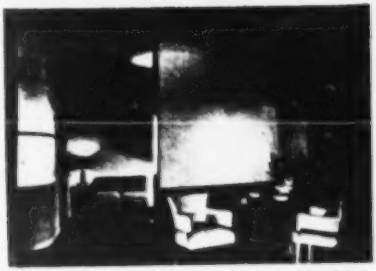


Clear Flutes flanks the entrance to Kroehler Display Rooms, Chicago ... adds the sparkle that attracts customers. Architect: Sterling McDonald.

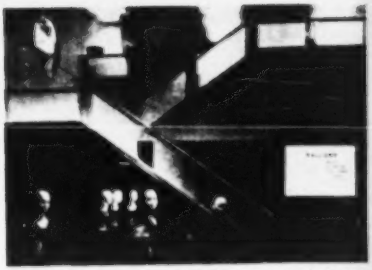
Satined Louvres screen porch, admits daylight to hall and forms a distinctive backdrop for plants. Architect: James E. Eppenstein, Chicago.



Light plus privacy gained through panels of clear Doublex which top the partitions in the buying offices of Lester Martin and Company, New York.



Interesting use of bent and flat Vitrolux Louvers to diffuse light in Montrose Mills offices, New York. Designed by Robert Gruen Associates.

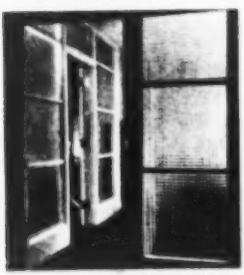


Clear Doublex stair-guard railing directs customers' attention to balcony at Wolf & Dessauer, Ft. Wayne, Ind. Architect A. M. Strauss.

Pyroleal Diatex lets light filter from dome to kitchen, yet conceals work area. Architect C. W. Matthew, San Francisco.

Clear Luxtrex hides an unpleasant view, admits ample light. Grenadier Dining Room, Detroit Leland Hotel.

Bent Diatex shields the serving counter. And it's serious to clean! Williams C. Stinson Restaurant, Erie, Pa.



Doublex doors and walls admit light to executive offices. Hotel Statler, Cleveland, Ohio.

In line with modern design! Diatex screen separates office from lobby. Architect: Ernst Payer, Cleveland.

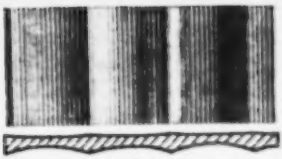
Privacy plus light through Doublex Partitions. Hegarty-Hyland Buying Offices designed by Verne Whalen, Beverly Hills.

five leading BLUE RIDGE patterns

these smart patterns enable

Architects and Designers

to create pleasing and desirable interiors and exteriors



Stylex

A rolled flat glass, with one smooth side and one pattern side consisting of curved parallel concave waves about $\frac{1}{16}$" deep. The crest of the waves are about $\frac{1}{4}$" apart, the surface of each being striated with approximately 15 small equidistant ribs about 1/1000" deep and parallel to the crests.

Made in $\frac{1}{8}$" and $\frac{3}{16}$" thicknesses with two polished, ground and polished and Satined finishes.

Approximate Light Transmission: uncut 73%; cut made in wire glass.

USES: Decorative interior installations for partitions, wall panels, kitchen cupboard doors

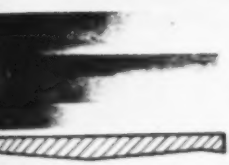
Linex

A rolled flat glass, one surface being smooth and the pattern side consisting of curved parallel concave flutes measuring about $\frac{1}{16}$" deep. The crests of the flutes are approximately $\frac{1}{4}$" apart.

Linex is made in $\frac{1}{8}$" and $\frac{3}{16}$" thicknesses in two polished, ground and polished and Satined finishes.

Approximate Light Transmission: uncut 89%; cut made in wire glass).

USES—Decorative interior and exterior glazing.



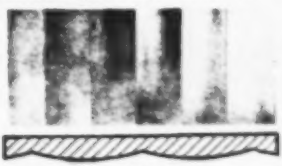
Louvrex

ade, alternately ascending and descending flat-surfaced strips, overlapping louvers in ion blinds. Quite transparent, but Satined ovrages obscurity and diffusion.

ade $\frac{1}{8}$" and $\frac{3}{16}$" thick with fire-finished n and $\frac{3}{16}$" thick only with flat surface nically ground and polished, also with rface Satined processed.

proximate Light Transmission: uncut ; cut (made in wire glass).

- Interior and exterior glazing, partitions etc.



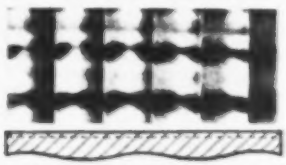
Flutex

Pattern consists of adjoining convex flutes 1 in. wide.

Made in $\frac{1}{8}$" and $\frac{3}{16}$" thicknesses with two polished surfaces, and in $\frac{3}{16}$" thickness only with flat surface mechanically ground and polished, also with flat surface Satined processed.

Approximate Light Transmission: uncut 89%; cut made in wire glass).

USES: Same as those of Louvrex. Provides effect of sharper, more definite pattern. (Not Satined Flutex, $\frac{3}{16}$" thick, is widely used in fluorescent light fixtures.



Duplex

A double patterned glass whose corrugated design on one surface runs at right angles to fluted design on other surface, forming a pronounced directional effect.

Made in $\frac{3}{16}$" thickness, with maximum width of 54" and length of 130".

Approximate Light Transmission: 87%.

USES: Interior and exterior glazing, partitions, screens, illuminated wall panels and other decorative purposes.

specifications for five leading Blue Ridge glass patterns

Product	Use	Light Diffusion and Obscurity	Pattern	Thickness	Size Rolled Two Finish Max. Width and Length	Surface: Ground and Polished flat surface	Surface: Polished Max. Width and Length	Surface: Satined Max. Width and Length	Approx. Weight No. Ft. Lbs. Glass Only
Louvrex	Decorative Interior and Exterior use	Slight	Alternate $\frac{1}{4}$" angular planes	$\frac{1}{8}$"	54" x 132"			54" x 132"	1½ lbs.
				$\frac{3}{16}$"	54" x 130"	54" x 130"		54" x 130"	2¼ lbs.
Flutex	Decorative Interior and Exterior use	Slight	Adjoining $\frac{1}{4}$" convex flutes	$\frac{1}{8}$"	54" x 132"			54" x 132"	1½ lbs.
				$\frac{3}{16}$"	54" x 130"	54" x 130"		54" x 130"	2¼ lbs.
Duplex	Decorative Interior and Exterior use	Good	1" Block pattern	$\frac{3}{16}$"	54" x 130"			54" x 130"	2¼ lbs.
Stylex	Decorative Interior use	Medium (Direction Spread)	Fine ribs on flats	$\frac{1}{8}$"	48" x 132"		48" x 132"	48" x 132"	1½ lbs.
				$\frac{3}{16}$"	48" x 130"	48" x 130"	48" x 130"	48" x 130"	2¼ lbs.
Linex	Decorative Interior and Exterior use	Slight	$\frac{1}{4}$" Concave flutes	$\frac{1}{8}$"	48" x 132"		48" x 132"	48" x 132"	1½ lbs.
				$\frac{3}{16}$"	48" x 130"	48" x 130"	48" x 130"	48" x 130"	2¼ lbs.

All nine patterns, within set available up to 60 inches, depending upon stocks on hand but plate under clear 48 inches cannot be Framed.

BLUE RIDGE wire glass

description

A continuous process wire glass wherein the mesh is chromium dipped to insure both clean wire and firmer adhesion of the glass to the wire. To insure greater strength, the wire is embedded as closely to the center of the glass as possible.

patterns

On the next page will be found descriptions of Hammered, Ribbed, Luminex, Skytex, Mazex, and Industrex patterned glass. These patterns are produced either with or without wire. Blue Ridge Akklo Heat Absorbing Glass in Hammered pattern can also be furnished with or without wire. In addition, Akklo Polished Wire Glass is produced in conventional hexagonal shaped mesh only. For information on Akklo Wire Glass, see pages 20 and 21.

approved fire retardant

Blue Ridge Wire Glass is an approved fire retardant, bearing number R-2129 of Underwriters' Laboratories, Inc. The rules of the National Board of Fire Underwriters limit the size of wire glass which can be glazed in openings exposed to fire hazard. In no case shall the unsupported area of the glass measure more than 48 inches in either dimension or exceed 720 square inches (5 sq. ft.). Typical maximum sizes which satisfactorily meet that requirement are 15 x 48, 18 x 40, 20 x 36 and 24 x 30. It should also be noted that wire glass used for this purpose must be set in noninflammable materials.

conventional polished wire glass

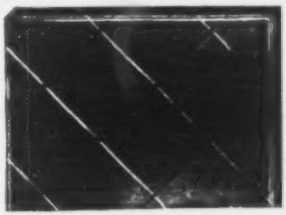
Used in all openings where clear vision and the security of non-scatterable, fire-retardant glass are desired. Note that wire is clean—no bubbles to mar the sharp outline or distort the vision.

Approved fire-retardant bearing number R-2129 of Underwriters' Laboratories, Inc.

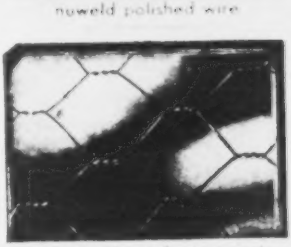
nuweld polished wire glass

The wires in this glass are welded together at each intersection to form a pleasing diagonal pattern.

The wires are subject to some misalignment. Absolute symmetry of the wire pattern cannot be guaranteed. This product is advised for openings when vision plus security of non-scatterable, fire-retardant glass is desired.



nuweld polished wire



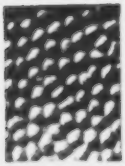
conventional polished wire glass

specifications for Blue Ridge wire glass

Product	Uses	Light Diffusion and Obscurity	Pattern	Thickness	Wire Rolled Pre-Finish Mesh Width and Length	Nuweld Mesh Width and Length	Nuweld Polished Both Surfaces Mesh Width and Length	Approx. Weight Sq. Ft. Lbs. (Glass Only)
Hammered	Windows, skylights and partitions requiring non-scatterable fire-retardant glass. Registered as Fire Retardent No. R-2129 by Underwriters Laboratories, Inc.	Medium	Ribbed	¼"	48" x 144"		48" x 144"	3.3 lbs.
			Adjacent	¼"	48" x 96"		48" x 96"	3.3 lbs.
			Lenses	¼"	48" x 96"		48" x 96"	3.3 lbs.
Ribbed		Medium-Directional Spread	Fine	¼"	48" x 144"		48" x 144"	3.3 lbs.
			Parallel	¼"	48" x 96"		48" x 96"	3.3 lbs.
Luminex			Ribs	¼"	48 x 96"		48" x 96"	3.3 lbs.
		Slight	Smooth See texture	¼"	48" x 144"		48" x 144"	3.3 lbs.
Skytex		Good-Directional	Parallel Ribs	¼"	48" x 144"		48" x 144"	3.3 lbs.
Industrex		Medium	Compact Lenticshaped	¼"	48" x 144"		48" x 144"	3.3 lbs.
Mazex		Good-to Highly Obscure	Floral swirl	¼"	48" x 144"			3.3 lbs.
Hex. Mesh Polished Wire		None		¼"	60" x 144"	60" x 144"		3.3 lbs.
Nuweld Polished Wire		None		¼"	60" x 144"	60" x 144"		3.3 lbs.

*No wire patterns within one inch of outside edge of finished piece. Depending upon stock on hand, last glass under these dimensions for Tempered

practical patterned glass



Hammered

Pattern shown actual size

USES. Popular for industrial glazing, both interior and exterior.

DESCRIPTION. An all-over series of round, adjacent lenses that diffuse light at a moderate angle in all directions.

Approximate Light Transmission: rough 90% — wired 81%

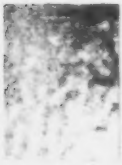
Ribbed

Pattern shown actual size

USES. For factory glazing and skylights, and for fluorescent lighting fixtures.

DESCRIPTION. Approximately twenty-one fine parallel ribs per inch spread light along the axis only. Ribs provide shade in ribs.

Approximate Light Transmission: rough 91% — wired 74%



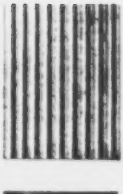
Luminex

Pattern shown actual size

USES. Recommended for industrial plants in connection with glazing where maximum light is desired.

DESCRIPTION. An almost transparent, fine textured pattern with high light transmission and only slight diffusion. Can be "turned" finished to assure complete privacy for walls or office partitions.

Approximate Light Transmission: rough 91% — wired 82%



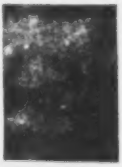
Skytex

Pattern shown actual size

USES. Ideal for skylights, equally suitable for industrial glazing, and for fluorescent fixtures.

DESCRIPTION. Obscure pattern of eight parallel ribs per inch which diffuses light on one axis only, perpendicular to the. Drums off combination. Usually glazed with ribs vertical.

Approximate Light Transmission: rough 91% — wired 74%



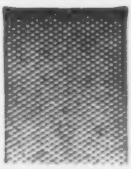
Velvex

Pattern shown actual size

USES. Very popular for interior glazing, doors, partitions, transoms and shower stalls.

DESCRIPTION. A semi-opaque rough glass with a smooth texture, only slightly diffusing. Easy to clean, whether left polished or "satined" surface finish.

Approximate Light Transmission: rough 91% — Not made in wire glass



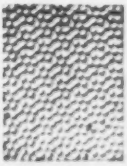
Industrex

Pattern shown actual size

USES. Primarily for factory glazing. Also suitable for some types of commercial structures, fluorescent fixtures.

DESCRIPTION. Tiny lens-shaped figures give uniform diffusion of light over wide areas, provide medium degree of privacy, are easily cleaned. Not recommended for partitions in office buildings.

Approximate Light Transmission: rough 88.2% — wired 82.2%



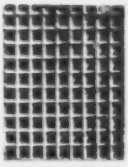
Diffutex

Pattern shown actual size

USES. For interior or exterior. Excellent for walls, partitions, transoms in offices, factories.

DESCRIPTION. Small, slightly elevated lenses provide uniform illumination with moderate angle of diffusion. Lenses are spaced to avoid dust-collecting pockets; easily cleaned.

Approximate Light Transmission: 87.8% — Not made in wire glass



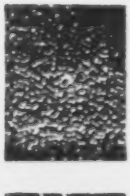
Reglex

Pattern shown actual size

USES. Especially effective in partitions and doors. Suitable for use in fluorescent fixtures.

DESCRIPTION. 64 pyramidal-shaped indentations to the square inch diffuse light very well in a cross-shaped light pattern; highly obscure.

Approximate Light Transmission: 82.3% — Not made in wire glass



Murolex

Pattern shown actual size

USES. Widely used for decorative effects in partitions, doors, transoms, walls, ceiling lights.

DESCRIPTION. Finely engraved, finely obscure all-over pattern that provides uniform distribution of light at a moderate angle. Rich looking, and very easy to clean.

Approximate Light Transmission: 88.0% — Not made in wire glass

Velvex

Pattern shown actual size

USES. Very popular for interior glazing, doors, partitions, transoms and shower stalls.

DESCRIPTION. A semi-opaque rough glass with a smooth texture, only slightly diffusing. Easy to clean, whether left polished or "satined" surface finish.

Approximate Light Transmission: 91% — Not made in wire glass

Pebbles

Pattern shown actual size

USES. Provides well-lighted privacy when used for office partitions and general interior glazing.

DESCRIPTION. A deeply impressed, irregular pebble design that is highly obscure and unusually brilliant in appearance. Diffuses light at wide angles.

Approximate Light Transmission: 79% — Not made in wire glass

"SATIN-O-LITE" provides good light diffusion and excellent obscurity, assuring privacy plus light.

for varied industrial requirements

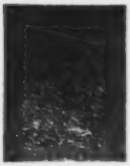
Florex

Pattern shown, actual size

USES. Interior glazing only: partitions, transoms, doors and windows.

DESCRIPTION. A graceful floral pattern. Its brilliance is largely due to the quality of the glass, since the imprinting is based on the principle of avoiding sharp grooves as much as possible.

Approximate Light Transmission 89.2%. (Not made in wire glass.)



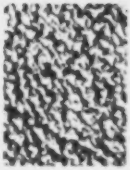
Pointex

Pattern shown, actual size

USES. Interior glazing in both plain and frosted finish. For sign work in frosted finish.

DESCRIPTION. Semi-transparent, with one smooth surface and one covered with about 570 irregularly sized honeycombs per square inch.

Approximate Light Transmission 92.5%. (Not made in wire glass.)



Sterlex

Pattern shown, actual size

USES. Other partitions and general interior glazing where well-lighted privacy is needed; also in lighting fixtures.

DESCRIPTION. Somewhat similar to Pebblex, but has deeper imprints. Diffuses light at wide angles, provides high degree of obscurity.

Approximate Light transmission 87.2%. (Not made in wire glass.)

specifications for practical patterned glass

Product	Uses	Light Diffusion and Obscurity	Pattern	Thickness	Plate, Rolled, Fire Finish *Max. Width and Length	Ground and Polished or Flat Surface Max. Width and Length	Frosted Max. Width and Length	Sprayed Max. Width and Length	Approx. Wt. per Sq. Ft. in Glass
Hammered	Industrial Glazing	Medium	Raised Adjacent Lenses	¼"	85" x 132"		85" x 132"	85" x 132"	1¼ lbs.
				⅜"	85" x 130"		85" x 130"	85" x 130"	2½ lbs.
				½"	85" x 90"		68" x 90"		3 lbs.
				¾"	68" x 90"		68" x 90"		4 lbs.
Ribbed	Industrial Glazing	Medium (Directional *spread)	Fine Parallel Ribs	¼"	85" x 132"		85" x 132"	85" x 132"	1¼ lbs.
				⅜"	85" x 130"		85" x 130"	85" x 130"	2½ lbs.
				½"	85" x 90"		68" x 90"		3 lbs.
				¾"	68" x 90"		68" x 90"		4 lbs.
Luminex	Industrial Glazing for Maximum Daylight	Slight	Smooth fine texture	¼"	85" x 132"		85" x 132"	85" x 132"	1¼ lbs.
				⅜"	85" x 130"		85" x 130"	85" x 130"	2½ lbs.
Pointex	General Glazing	Slight	Irregular Raised Bosses	¼" (Sheet)	85" x 129"		85" x 129"		1¼ lbs.
Skylex	Industrial Glazing	Good (Directional *spread)	Parallel Ribs	¼"	85" x 132"		85" x 132"	85" x 132"	1¼ lbs.
				⅜"	85" x 130"		85" x 130"	85" x 130"	2½ lbs.
Velex	Interior Partitions, Doors, Transoms	Slight	Smooth mottled texture	¼"	85" x 132"		85" x 132"	85" x 132"	1¼ lbs.
				⅜"	85" x 130"		85" x 130"	85" x 130"	2½ lbs.
Industrex	Factory Glazing	Medium	Compact lens-shaped	¼"	85" x 132"		85" x 132"	85" x 132"	1¼ lbs.
				⅜"	85" x 130"		85" x 130"	85" x 130"	2½ lbs.
Diffusex	Interiors for soft light diffusion	Medium	Elevated small lenses	¼"	85" x 132"			85" x 132"	1¼ lbs.
				⅜"	85" x 130"	85" x 130"		85" x 130"	2½ lbs.
Pebblex	Interior Glazing	Good	Irregularly pebbled effect	¼"	85" x 132"			85" x 132"	1¼ lbs.
				⅜"	85" x 130"	85" x 130"		85" x 130"	2½ lbs.
Regalex	Interior Glazing	Good	Regular Pyramidal Indentations	¼"	85" x 132"			85" x 132"	1¼ lbs.
				⅜"	85" x 130"	85" x 130"		85" x 130"	2½ lbs.
Marvalex	Fine Interior Glazing	Good	Finely engraved indeterminate	¼"	85" x 132"			85" x 132"	1¼ lbs.
				⅜"	85" x 130"	85" x 130"		85" x 130"	2½ lbs.
Florex	Interior Glazing	Good	Floral	¼"	85" x 132"			85" x 132"	1¼ lbs.
				⅜"	85" x 130"			85" x 130"	2½ lbs.
Sterlex	Office Partitions General Interior Glazing	Good	Pebbled Effect	¼"	85" x 132"			85" x 132"	1¼ lbs.
				⅜"	85" x 130"			85" x 130"	2½ lbs.

*In some patterns, widths are available up to 60 inches depending on thickness on hand, but glass wider than 48 inches cannot be Tempered.

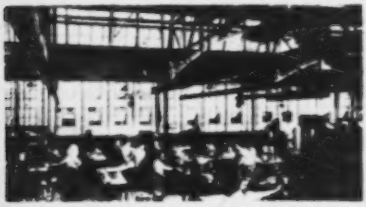
BLUE RIDGE Aklo heat absorbing

description

Blue Ridge Aklo is a "low expansion" figured and wire glass of blue-green color, with extremely high resistance to passage of solar infrared rays and to sun glare when frosted. Provides free transmission of pleasing, eye-resting quality light—entirely suitable for precision and close work and other operations where eye fatigue is encountered.

patterns

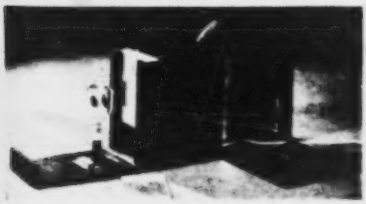
One pattern—Hammered, wired and unwired—is manufactured.



Abundant natural daylight, *without glare*, improves vision for close work in this East Hartford, Conn., machine shop.

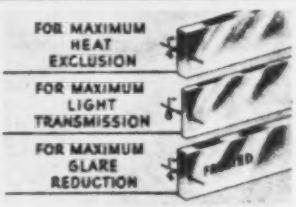
glare reduction

The primary function of Aklo Glass with fire-finished surface is to retard the entry of solar heat. To reduce sun glare through windows and skylights and, at the same time, improve illumination, Frosted Aklo should be used. In every instance where glare reduction is the primary purpose of installation, $\frac{1}{4}$-inch thickness is recommended.



radiometer

The unusual heat absorption and glare reducing qualities of Blue Ridge Aklo Glass are visually demonstrated with the portable Radiometer Kit, shown above. Your glass distributor will gladly show you Aklo's superiority right in your own office.

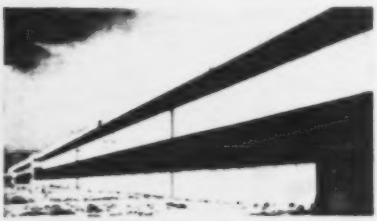


FOR SPECIFICATIONS

"To combine glare reduction and solar heat exclusion, specify Frosted Aklo or Hammered (Wired or Unwired), in $\frac{1}{4}$-inch thickness. "All other skylights and window areas facing north or in permanent shade and designated on the drawings to receive obscure glass shall be glazed with non-heat-absorbing glass of the patterns, thicknesses and types indicated herein."

characteristics of Aklo Glass

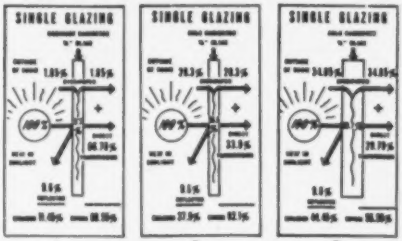
The coefficient of expansion of Aklo Glass is approximately 20% less than ordinary glass—an important feature in sun heat control. To combine reduction of glare and exclusion of solar heat, specify "*Frosted* Aklo Hammered (Wired or Unwired), in $\frac{1}{4}$-inch thickness" (if transparency is desired, specify $\frac{1}{4}$-inch Aklo Polished Wire). Blue Ridge Aklo Glass complies with requirements of E9-Type II Glass for absorbing or intercepting ultraviolet and infrared rays. Federal Specifications DDG-451. Aklo Glass also conforms to those specifications outlined in paragraph No. 24 of May, 1939, Glass and Glazing Section of the Treasury Department.



Over 7 miles of Frosted Aklo in Melrose Park, Ill., plant of International Harvester cuts down solar heat, reduces sun glare.

and glare reducing glass

How Aklo Stops Sun Heat Radiation



1 2 3

These three charts show how Aklo absorbs excessive solar heat while admitting ample light. They compare the flow of the sun's heat through (1) ¼-inch ordinary hammered glass, (2) ¼-inch Aklo Hammered Glass and (3) ¼-inch Aklo Hammered Glass. Note how much more sun heat is dissipated by Aklo Glass than by ordinary glass of equal thickness.

Because Aklo Glass traps the solar heat in summer, it makes work areas far more comfortable than other types of industrial glass. When *Frosted*, Aklo greatly reduces glare—an aid to precision operations.

Comparative Qualities of Aklo and Ordinary Glass

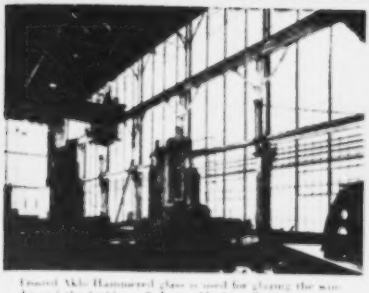
Thickness and Kind of Glass	Heat: Total Heat of Sun Entering Room Through Glass — Dissipated by the glass	Heat: Total Heat of Sun Entering Room Through Glass — Transmitted directly through glass	Heat: Total Heat of Sun Entering Room Through Glass — Total heat entering through the glass	Efficiency: Ratio of light transmission to heat passing directly through glass
HAMMERED PATTERN				
¼" Aklo Glass—Unwired	28.30%	33.80%	62.10%	1.87:1
¼" Ordinary (Lime) Glass—Unwired	1.85	86.70	88.55	1.03:1
¼" Frosted Aklo Glass—Unwired	34.00	23.00	57.00	1.87:1
¼" Aklo Glass—Unwired	34.85	20.70	55.55	2.58:1
¼" Ordinary (Lime) Glass—Unwired	2.70	83.00	86.70	1.07:1
¼" Aklo Glass—Wired	35.70	19.00	54.70	2.57:1
¼" Ordinary (Lime) Glass—Wired	5.60	79.20	84.80	1.07:1
¼" Frosted Aklo Glass	38.70	13.60	52.30	2.58:1
FOR COMPARISON ONLY				
¼" Aklo Glass—Polished	27.00	38.00	65.00	1.87:1
¼" Ordinary (Lime) Glass—Polished	1.85	88.30	90.15	1.03:1
¼" Aklo Glass—Polished	35.50	21.00	56.50	2.57:1
¼" Ordinary (Lime) Glass—Polished	3.75	84.50	88.25	1.07:1

Specifications for Blue Ridge Aklo Heat Absorbing Glass

Product	Uses	Light Diffusion and Obscurity	Pattern	Thickness	Plate Polished Fire Finished Max Width and Length	Ground and Polished	Frosted* Max Width and Length	Approx. Weight Sq. Ft. Lbs.
FIGURED GLASS								
AKLO—Hammered	Substantially reduces sun's heat, admits daylight and improves illumination.	Medium	Raised Adjacent Lenses	¼"	32" x 132"		32" x 132"	1¾ lbs.
				¼"	32" x 136"		32" x 136"	3 lbs.
WIRE GLASS								
AKLO—Hammered	Same as for AKLO Heat Absorbing Figured Glass. However, being wired, each is a non-scatterable, fire-retardant glass.	Medium	Raised Adjacent Lenses	¼"	24" x 144"		24" x 144"	3 lbs.
AKLO—Polished Wire (Hex. Mesh only)		None		¼"	24" x 60"	X		3 lbs.

*Frosted AKLO provides excellent diffusion of light, high degree of obscurity and effective glare reduction.

BLUE RIDGE Aklo glass (continued)



Tinted Aklo Hammered glass is used for glazing the sawdust of the Goldsage & Lewis Machine Tool Company, Fond du Lac, Wisconsin. This reduces the sun's heat. Architect: Frank Stepanek & Son, Fond du Lac.

Reduction of the sun's glare is important to such a textile mill as the Cranford Manufacturing Company of Richmond, Va. In addition, the heat absorbing qualities of Tinted Aklo make working conditions more pleasant.

representative list of Blue Ridge Aklo users

Dorfan Mills, Dorfan, Ala.
Goodyear Tire & Rubber Co., Camden, Ala.
Dwight Mfg. Co., Alabama City, Ala.
Aluminum Co. of America, Phoenix, Ariz.
Southern Kraft Corp., Camden, Ark.
Pacific Mfg. Co., Santa Clara, Cal.
Hughes Aircraft Corp., San Diego, Cal.
Ryan Aircraft Corp., San Diego, Cal.
New Departure Mfg. Co., Bristol, Conn.
The Bullard Co., Bridgeport, Conn.
Vickers, Inc., Waterbury, Conn.
Pratt & Whitney Aircraft Corp., Hartford, Conn.
Pan-American Hangar, Miami, Fla.
Florida Linen Supply Co., Miami, Fla.
J. & H. Short Company, Cochran, Ga.
Dixie Cotton Mills, La Grange, Ga.
Columbus Mfg. Co., Columbus, Ga.
West Point Mfg. Co., West Point, Ga.
Container Corporation, Chicago, Ill.
Twin Disc Clutch Co., Rockford, Ill.
Buick Motors Corp., Norpaul, Ill.
Naval Ordnance Plant, Forest Park, Ill.
Republic Aviation Corp., Evansville, Ind.
McQuay Norris Mfg. Co., Connersville, Ind.
Aluminum Co. of America, Lafayette, Ind.
Tobin Packing Co., Fort Dodge, Iowa
Cessna Aircraft Corp., Wichita, Kan.
Boeing Aircraft Corp., Council, Kan.
Menzel Co., Louisville, Ky.
Nash Kelvinator, New Orleans, La.
T. J. Murphy Fur Co., Lewiston, Me.
Revere Copper & Brass Co., Hale-thorpe, Md.
Glenn L. Martin Co., Middle River, Md.
Danzer Metal Works, Hagerstown, Md.
Ludlow Mfg. & Sales Co., Ludlow, Mass.
United States Rubber Co., Chicopee Falls, Mass.
Pacific Mills, Lawrence, Mass.
Leland Gifford Co., Worcester, Mass.
Ford Motor Bomber Plant, Willow Run, Mich.
Extruded Metals Corp., Grand Rapids, Mich.
Fisher Tank Corp., Grand Blanc, Mich.
Chevrolet Gear & Axle Corp., Hamtramck, Mich.
Long Hall Laundry, Kansas City, Mo.
American Can Co., St. Louis, Mo.
Curtiss-Wright Corp., Robertson, Mo.
Westcott Valve Co., St. Louis, Mo.
Martin Bomber Plant, Ft. Crook, Neb.
Woombee Mills, Manchester, N. H.
Hyatt Roller Bearing Division, Clark Township, N. J.
Singer Mfg. Co., Finderne, N. J.
De Laval Steam Turbine Co., Trenton, N. J.
General Cable Corp., Perth Amboy, N. J.
Rochester Products Div., General Motors Corp., Rochester, N. Y.
New York Airbrake Co., Watertown, N. Y.
Worthington Pump Co., Buffalo, N. Y.
American Locomotive Co., Auburn, N. Y.
Republic Aviation Corp., Farmingdale, L. I., N. Y.
Concord Knitting Co., Concord, N. C.
Stanfield Mills, Inc., Wilmington, N. C.
Parkedale Mills, Inc., Gastonia, N. C.
Arlington Mill, Gastonia, N. C.
Rosemary Mfg. Co., Roanoke Rapids, N. C.
Lake Cars Malleable, Inc., Ashtabula, Ohio
Canton Drop Forge, Canton, Ohio
Goodyear Rubber Co., Akron, Ohio
Curtiss-Wright Corp., Columbus, Ohio
Thompson Aircraft Products Co., Euclid, Ohio
Sylvania Electric Products Co., Emporium, Pa.
Landis Tool Co., Waynesboro, Pa.
National Biscuit Co., Philadelphia, Pa.
Curtiss-Wright Propeller Div., Beaver, Pa.
Naval Air Station, Davisville, R. I.
Bowling Green Spinning Co., Clover, S. C.
Ware Shoals Mfg. Co., Ware Shoals, S. C.
Brandon Corp., Greenville, S. C.
Equinox Mills, Anderson, S. C.
Riverside & Orchards, Inc., Signal Mountain, Tenn.
Tennessee Eastman Corp., Kingsport, Tenn.
Shelby Paper Box Co., Memphis, Tenn.
General Tire & Rubber Co., Waco, Tex.
Dow Chemical Co., Velasco, Tex.
Hagger Paste Co., Dallas, Tex.
Naval Ammunition Depot, Portsmouth, Va.
U. S. Marine Corps, Quantico, Va.
Sylvania Electric Products Co., Huntington, W. Va.
Corning Glass Works, Parkersburg, W. Va.
United States Rubber Co., Fairchore, Wis.
Goldsage & Lewis Machine Co., Fond du Lac, Wis.

BLUE RIDGE Securit patterned glass

description

Securit is made by subjecting Blue Ridge Patterned glass, which has been annealed in the regular manner, to a special process of heat treatment and rapid cooling that creates a highly compressed zone at the outer surface. The tensile strength of Securit, as determined by its modulus of rupture, is over 3½ times greater than in a piece of regular Blue Ridge glass of similar pattern and thickness. When the limit of its strength is reached, Securit disintegrates into small, rounded, relatively smooth particles.

In addition to its greater strength, Securit is extremely resistant to temperature variations which may affect a whole sheet, or only portions.

physical characteristics

Securit's physical characteristics determined by laboratory tests follow:

Modulus of Rupture—28,800 lbs. per sq. in. of cross section.
Hardness—Mohs' Scale—6
Thermal Endurance—400° F. differential
Safe Working Temperature (maximum)—650° F.
Maximum sizes:
Square—30" x 30" Oblong—30" x 72"

advantages

Due to its special heat treatment, Securit Blue Ridge patterned glass possesses the following advantages:

Three to five times stronger than "non-Securitized" patterned glass.
Withstands impact shock far beyond the limits of ordinary rolled glass.
More resistant to thermal shock.

A safer glass since, when it does break, it disintegr into small dired particles rather than large fragme with sharp jagged edges.

available forms

Patterned Glass ⅛" thickness—Hammered, Rib Luminex, Skytex, Velvex, Industrex, Diffusex, Flo Pebblex, Reglex, Muralex, Louvrex, Flutex, Sty Linex, Sterlex.

Patterned Glass ³⁄₁₆" and ¼" thickness—Hammer Ribbed.

Patterned Akklo Glass ¼" thickness—Hammered,

Patterned Glass ½" polished one side—Diffu Pebblex, Muralex, Reglex, Louvrex, Flutex, Sty Linex.

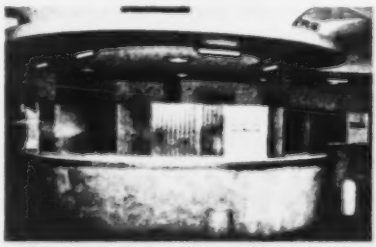
Note: Wire glass cannot be "Securitized".

uses

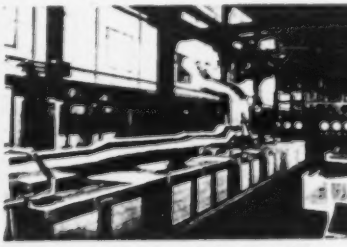
Office doors or partitions which are subjected to sideable slamming or bumping.
Lighting fixture diffusing glass, and lenses for lan
Ceiling sash or sub-skylights.
Tops for cutting tables or counters.
Push plates and kick plates.
Commercial and residential shelving.
Guards around areas subjected to intense heat.
Balustrades and stair railings.
Windows frequently broken by flying materials.

With its special physical qualities, numerous patt and surface treatments, Securit is a versatile prod Practical uses are being found for it almost daily. Blue Ridge Glass Corp., Kingsport, Tenn., welco inquiries from architects and opportunities to s their problems.

If strong Securit tempered glass is supplied by Blue Ridge Corp., in the actual shapes and sizes required, but it cannot subsequently cut or ground. Cutting or puncturing the su or chipping the edges will cause immediate disintegration glass.



Securit office railing of Satined Louvrex Glass is used in the Las Vegas, Nevada ticket office of the Union Pacific Railroad. This application of Securit Louvrex is both practical and handsome.



Blue Ridge Akklo Glass may also be Securitized. To resist the salt fumes and intense heat in the Salt Cake Bath Department of the Owens-Illinois Glass & Heat Treating Co., Clayton, Ohio, windows are glazed with Securitized Hammered Akklo.

Libbey-Owens-Ford Hi-Test Safety Glass is made of two lights of polished plate or sheet glass bonded to a tough transparent plastic, and represents the highest achievement in safety glass quality and performance. An important feature is that when safety glass is fractured, the particles of glass tend to adhere to the plastic, affording more protection against flying glass fragments.

For years, L·O·F Safety Glass has been a standard in the automotive and transportation industries.

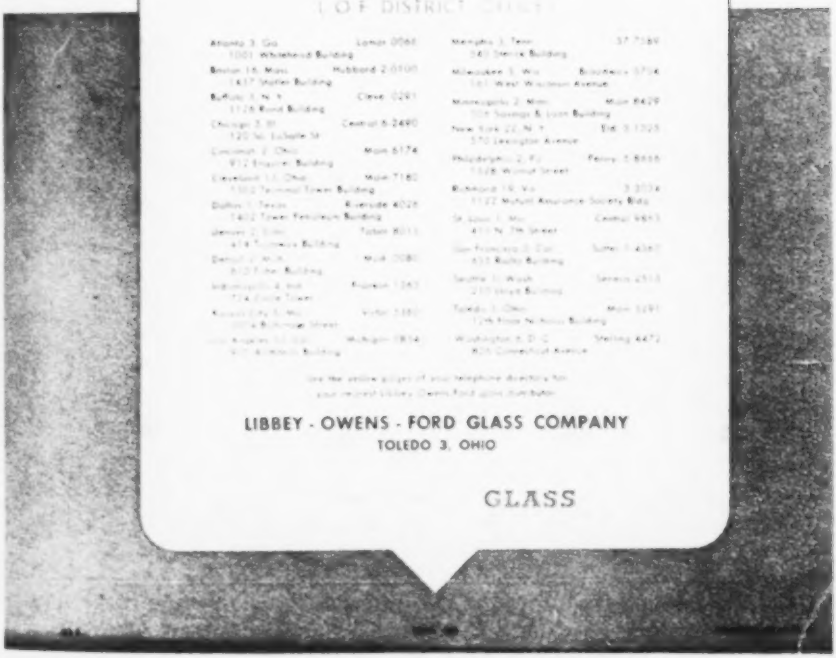
Uses

Libbey-Owens-Ford Safety Glass is recommended for interior glazing areas where additional protection is desired.

Bullet Resisting Plate glass is a laminations of three or more lights of glass and transparent plastic. It is commonly used for glazing bank teller cages, cash booths and observation windows or pressure test chambers.

Note: Safety Glass made with *Duflex*, page 11, has extra strength qualities.

	Nominal Thickness	Thickness Tolerance	Thickness Variation	Weight per sq. ft.	Visible Light Transmission
Hi-Test Safety Glass					
Duflex Safety Glass					
K-S Safety Glass					
Combination Safety Glass K-S & H-S					
H-S Safety Glass					
Safety Plate					



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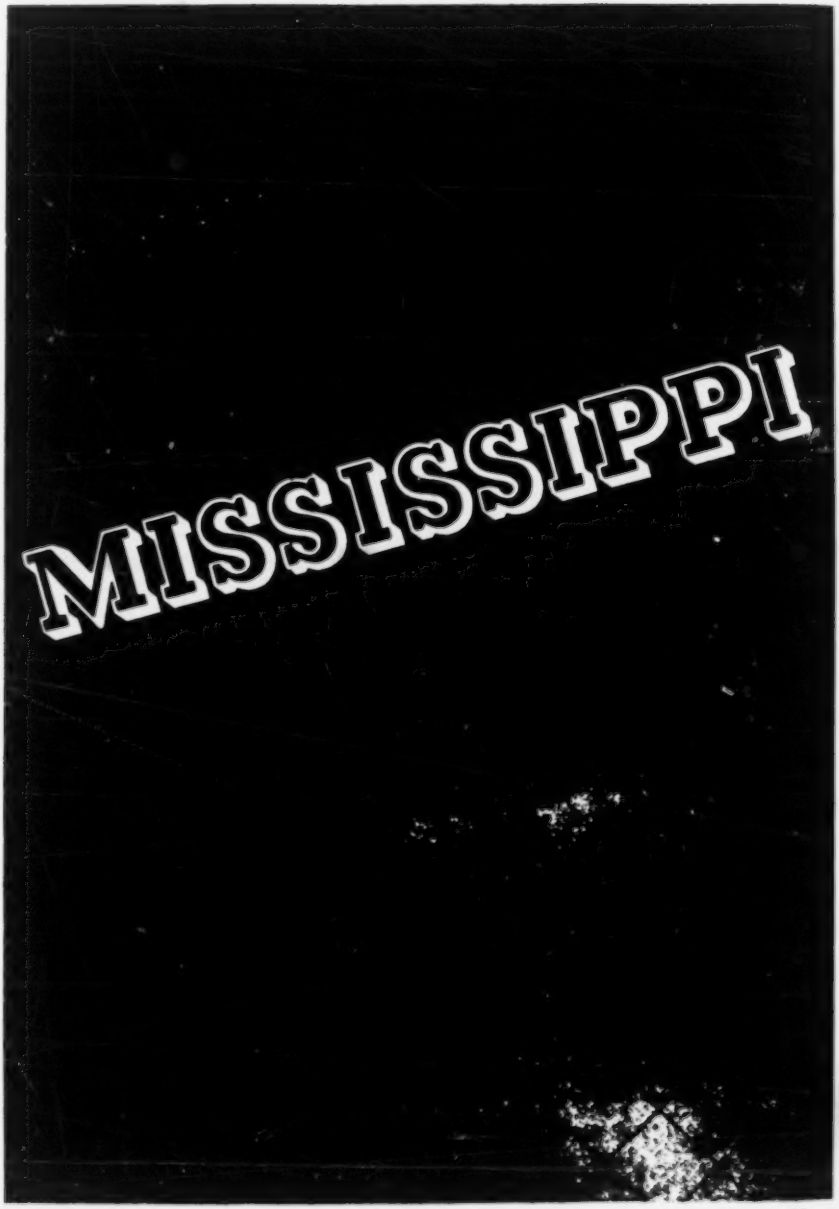
Defendant's Exhibit 5



618

Mississippi Products

Rolled Light Diffusing Glasses, Scientifically Designed to Distribute Illumination Advantageously

PRODUCTS
FIGURED GLASS
FIGURED WIRE GLASS
FIGURED MISCO WIRE GLASS
POLISHED FIGURED GLASS
POLISHED WIRE GLASS
POLISHED MISCO WIRE GLASS
HEAT ABSORBING GLASS
GLARE REDUCING GLASS
STRUCTURAL CORRUGATED GLASS
CORRUGATED WIRE GLASS
FLINT AND COLORED CATHEDRAL GLASS
CATHEDRAL AND WIRE VITAGLASS

MISSISSIPPI GLASS

The various patterns of Mississippi Figured Glass make it possible to choose styles that will be in keeping with the architecture of a building, as well as to obtain the maximum possible advantage from daylight illumination.

Brilliancy, strength, true cutting surface, uniformity of color and excellence of quality in Mississippi patterns combine with moderate cost to make Mississippi Glass the choice of thousands of architects, engineers and builders.

DISTRIBUTION

Mississippi Products are carried in stock by glass jobbers and dealers in every large city in the United States.

MISSISSIPPI WIRE GLASS

The Mississippi Glass Company is the original manufacturer of Solid Wire Glass, which is universally recognized as the standard, being the product upon which the Underwriters' standard was based in 1899.

Wire Glass—is glass having a wire netting completely embedded within the sheet in a position parallel to each surface. This is automatically effected while the glass is in a molten state and, therefore, insures homogeneous and solid wire glass.

ADAPTABILITY OF WIRE GLASS

The object of Wire Glass is to afford constant fire protection at a minimum cost, at the same time admitting and diffusing the light. It is particularly suitable for use in windows, doors, transoms, skylights, and all places where fire or breakage protection is required.

ADVANTAGES OF WIRE GLASS

When employed as above mentioned, Wire Glass may be cracked by severe heat or sudden shock, but the wire mesh will hold the pieces in place, preventing their falling and causing serious injury or loss of life. It will also prevent draft and hold a fire within the bounds of its origin.

UNDERWRITERS' REQUIREMENTS

Standard wire glass ¼ in. in thickness for use in labeled fire window frames and in such labeled fire doors and fire door frames as are recognized when equipped with glass lights.

See Underwriters' Laboratories classification of wire glass sizes permissible for:
1—Openings in corridor and room partitions.
2—Openings in exterior walls.
3—Openings to exterior fire escapes.
4—Openings in vertical shafts.

ORDERING

Glass being one of the last materials to go into a building, it is often not ordered far enough ahead to give the manufacturer time to cut the glass to sizes and make shipment in time to enclose the building by the date desired. It is, therefore, advisable to give this point consideration in due time in order to avoid unnecessary delay.

In ordering always specify width first. In wire glass, the twist of the wire runs with the length of the sheet. When giving sizes remember that the first dimension is understood to be the width.

HOW TO SPECIFY WIRE GLASS

Mississippi Wire Glass shall be installed in (specify location) and in all places marked "W.G." on plans and elevations.

The Wire Glass to have a thickness of at least ¼ in. at thinnest point. Wire mesh to be not larger than ⅞ in., and no wire used for such mesh to be smaller than No. 24 B&S gauge.

Wire mesh to be (specify) standard woven wire, or welded Misco wire mesh.

State name of glass pattern and location in which it is to be installed.

Identification on Mississippi Wire Glass

This seal is 2¾ in. in diameter, and is printed in red.

MISSISSIPPI PRODUCTS—MAXIMUM SIZES AND APPROXIMATE WEIGHTS

PLAIN GLASS

NAME											NAME										
Aurora	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Bendite Sahara	1/2	54	136	9.7	3.9					
Bendite	1/8	48	139	9.0	9.5	1/2	54	136	9.7	3.9	Bevelite Sahara	1/2	54	136	9.7	3.9					
Bevelite	1/8	48	139	9.0	9.5	1/2	54	136	9.7	3.9	Broadlite	1/4	48	139	9.0	9.5					
Duolite	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Broadlite	3/8	60	136	9.7	3.9					
Factrolite	1/4	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Coolite Hammered	1/8	54	139	9.0	9.5					
Florentine	1/4	48	139	9.0	9.5	-	-	-	-	-	Coolite Hammered	1/4	54	144	3.3	4.0					
Hammered	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Improved Structural Corrugated Flint	3/8	50	144	6.3	8.9					
Hylite	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Structurelite	3/8	50	144	5.3	6.7					
Luxlite	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Polished Aurora	1/2	60	135	9.8	3.5					
Magnalite A.	1/4	60	144	3.3	4.0	-	-	-	-	-	Polished Duolite	1/2	60	135	9.8	3.5					
Magnalite B.	1/4	60	144	3.3	4.0	-	-	-	-	-	Polished Syenite	1/2	60	135	9.8	3.5					
Pantecor	1/8	48	100	9.0	9.5	1/2	60	136	9.7	3.9	Vita Glass Plate	3/8	60	100	9.3	3.0					
Pluralite	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Vita Glass Sheet	1/29	46	60	1.6	2.2					
Ribbed	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Vita Glass Rolled	1/8	30	90	9.0	2.3					
Ribbed	3/8	60	144	5.0	6.5	1/2	60	139	6.3	8.0	Vita Glass Rolled	1/4	30	72	3.3	4.1					
Smooth Rough	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9	Vita Glass Agricultural	1/4	30	90	9.0	2.3					
Syenite	1/8	48	139	9.0	9.5	1/2	60	136	9.7	3.9											

WIRE GLASS

Factrolite	1/4	60	144	3.4	4.0	-	-	-	-	-	Smooth Rough	1/4	60	144	3.4	4.0	3/8	60	139	5.0	7.0
Hammered	1/4	60	144	3.4	4.0	-	-	-	-	-	Polished	1/4	60	139	3.1	4.4	3/8	60	139	5.1	7.0
Hylite	1/4	60	144	3.4	4.0	-	-	-	-	-	Polished	1/2	44	190	7.0	9.0	3/8	48	108	8.2	10.2
Magnalite A.	1/4	60	144	3.4	4.0	-	-	-	-	-	Polished	3/4	48	96	10.0	12.0	-	-	-	-	-
Magnalite B.	1/4	60	144	3.4	4.0	-	-	-	-	-	Coolite Hammered						1/4	54	144	3.4	4.0
Pantecor	1/4	60	144	3.4	4.0	-	-	-	-	-	Corrugated Flint						3/8	55	139	6.3	8.2
Ribbed	1/4	60	144	3.4	4.0	3/8	60	139	5.0	7.0	Misco Hammered						1/4	56	144	3.4	4.0
Ribbed	1/4	60	139	6.5	8.5	3/8	46	139	8.5	10.5	Misco Polished						1/4	58	139	3.7	4.4
Ribbed	3/8	44	139	10.0	12.0	3/8	44	190	11.5	13.5	Misco Polished Coolite						1/4	58	139	3.7	4.4
Syenite	1/4	60	144	3.4	4.0	-	-	-	-	-	Vita Glass Rough						1/4	30	72	3.4	4.1

GLARE REDUCING FINISH

Can be applied to both surfaces only of glasses listed above except the Vita glasses. G.R. treatment cannot be applied to glass over 30" x 136". Sahara finish on Bendite and Bevelite can be applied to either or both surfaces.

CATHEDRAL GLASS

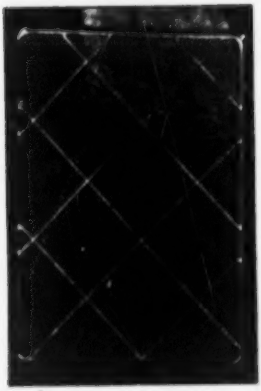
Hammered	No.	Hammered	No.	Hammered	No.	Hammered	No.	Hammered	No.	Smooth	No.
Flint	1	Amber	34III	Amber	47	Cobalt Blue	58	Var. Opal	313#	Flint	1
Green	13	Amber	34II	Amber	48	Green	63	Ripple	No.	Amber	34III
Wine	16	Amber	34I	Amber	49	Green	65	Flint	1	Opal	300 D
Wine	19	Amber	34	Copper Blue	50	Var. Opal	305#	Amber	34	Opal	300 W
Wine	20	Amber	35	Copper Blue	51	Var. Opal	306#	Seeded	No.		
Wine	23	Amber	45	Cobalt Blue	56	Var. Opal	308#	Flint	1		
Amber	34III	Amber	46	Cobalt Blue	57	Var. Opal	310#	Amber	34III		

Cathedral thickness scant ¼". Maximum width 30" or 32". Maximum length 84" or 90". Weight: Unpacked, 1½ lbs. Packed, 2 lbs.

General Notes:

Most glasses are often available up to 60" wide. Information on request. Weights shown are to pounds per square foot. Dimensions in inches. The packed weights listed are average for all case sizes; ordinarily the glass in full cases will weigh somewhat less than listed. Full cases of stock sheets weigh approximately 1500 lbs. Mill sizes 950 lbs. Normal cut sizes 900 lbs. See our packing schedule.

In ordering glass, the first dimension should be the width, the second the length. All ribs and twists in wire run with the length.



POLISHED "MISCO" WIRE GLASS
PATTERN ACTUAL SIZE

"MISCO"
POLISHED WIRE GLASS

Each Intersection of Wire Is Welded

"Misco" is the latest development in wire glass brought about as a result of many requests from the architectural and engineering professions for something as efficient as the Standard Wire Glass, but more attractive in appearance. "Misco" has been submitted to the Underwriters' Laboratories for test and received their full approval.

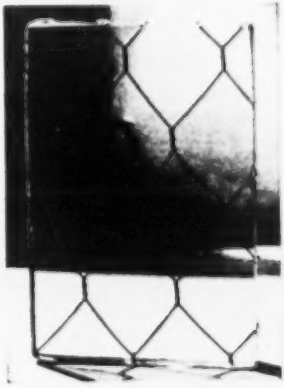
"Misco" can be obtained not only in polished, as illustrated, but in other surface patterns. (See chart, page 3). To be sure of getting this new glass, specify it by name—"Misco."

MISSISSIPPI
POLISHED WIRE GLASS

The Standard

In 1901 the Mississippi Glass Co. began the manufacture of wire glass. Fire and breakage demonstrations soon convinced architects, engineers and the general public of its ability to protect buildings from fire without keeping the interior in utter darkness.

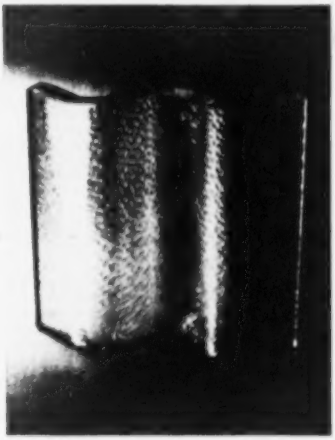
A circular sent out Aug. 24, 1899 stated "The Solid Wire Glass manufactured by the Mississippi Glass Co. is the only make of wire glass officially approved by Boards of Fire Insurance Underwriters. Since that time wire glass has been made by other manufacturers but Mississippi wire glass is still *recognized as standard*.



POLISHED WIRE GLASS
PATTERN ACTUAL SIZE

621

IMPROVED STRUCTURAL CORRUGATED GLASS



A heavy corrugated glass with one surface lightly stippled for obscurity and light diffusion; corrugations 2½ in. from center to center, thickness of glass approximately ⅜ in. and over-all thickness of the sheet approximately 1⅛ in.

This glass offers Architects and Decorators a wonderful opportunity to create new and attractive lighting and decorative effects for interiors of Offices, Showrooms, Banks and Residences.

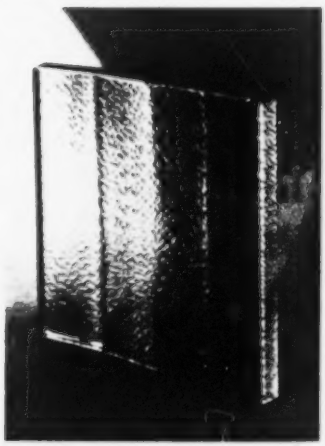
It has an unusual, substantial, rich appearance of quality and character, which is most impressive to any critical observer.

"STRUCTURALITE"

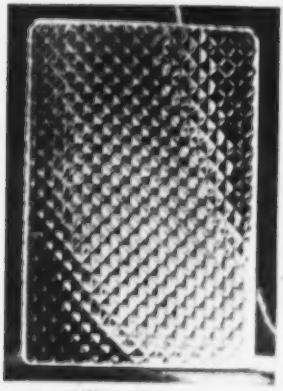
A heavy glass with one surface lightly stippled, the shallow corrugations of which produce the effect of a moiré line pattern of unusual life and character.

This is a companion pattern to Improved Structural Corrugated, in that the surface is substantially the same, with very shallow corrugations. It can be used in the same manner and is perfect for use, if so desired.

Corrugations 2½ in. from center to center, thickness of glass approximately ⅜ in. and over-all thickness of the sheet approximately 1 in.

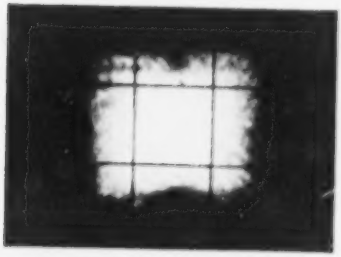


ADDITIONAL INFORMATION ON PAGE 3



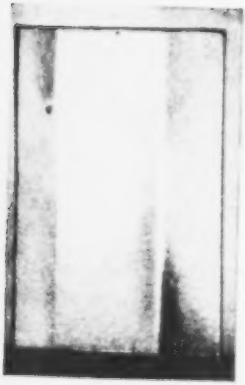
"AURORA"

A diamond design of pyramidal projections with straight depressed valleys which make it easy to clean. An unusually efficient obscure pattern with high transmission of light. Light which is diffused in square shape design is deflected to working plane and to ceiling where it is reflected down and shadows from horizontal illumination are eliminated.

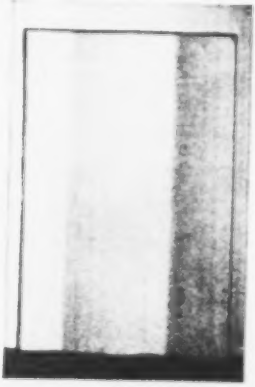


LIGHT DISTRIBUTION CHART

"BANDLITE"



"BEVELITE"



New types of glass suitable for special decorative design. These patterns give an architect or designer an opportunity to produce interesting effects from natural and artificial illumination.

MADE WITH
FIRE GLAZED
POLISHED
OR
SOFTONE
SURFACE

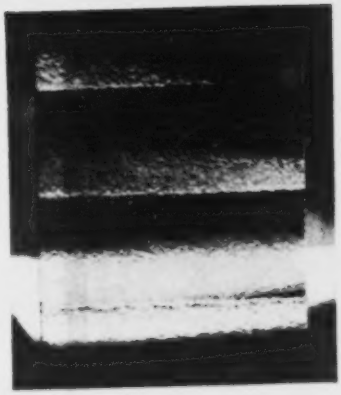
ADDITIONAL INFORMATION ON PAGE 3

"BROADLITE"

Conspicuous for its brilliance and obscurity, with a lustrous pleasing texture which produces an atmosphere of beautiful rich quality, so important in modernization work.

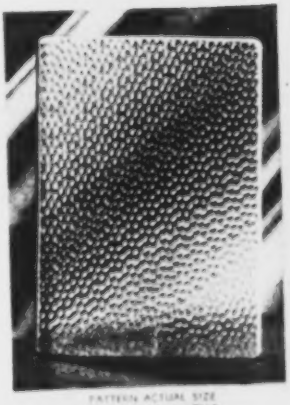
In new work it carries out the streamlined effect which is so popular with everyone.

PATTERN CONTOUR ACTUAL SIZE
Thicknesses—½ in. and ⅝ in.

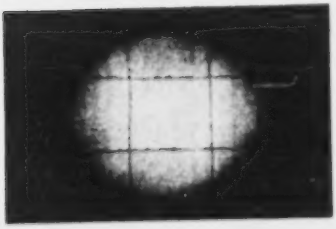


"DEWLITE"

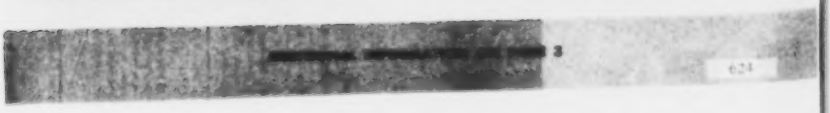
Designed for maximum light diffusion. Small slightly elevated lenses grouped in an attractive manner and spaced to avoid dirt-collecting pockets. It is very easily cleaned and gives a uniform distribution of daylight or artificial illumination in a circular shaped pattern.

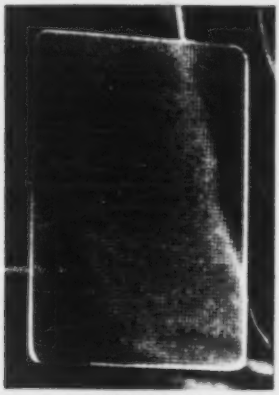


PATTERN ACTUAL SIZE
Plain—½ in. Thick
Polished—½ in. Thick
APPROX. LIGHT TRANSMISSION FOR ½ IN. THICKNESS—[illegible]



LIGHT DISTRIBUTION CHART



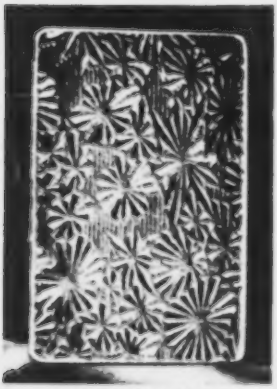


PATTERN ACTUAL SIZE
Plate—¼ in. Thick
Wire Glass—¼ in. Thick
APPROX. LIGHT TRANSMISSION FOR ¼ IN. THICKNESS 72.8%

"FACTROLITE"

A cross-rib which forms tiny concave lenses to break up the direct rays of the sun and diffuse the light in all directions; cuts down the sun's intensity near the windows increasing the illumination 25 feet from the window about 72% over that from clear window glass. Especially designed for use in vertical (side wall window) openings of industrial buildings.

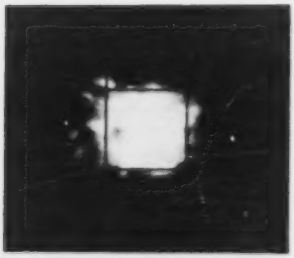
LIGHT DISTRIBUTION CHART



PATTERN ACTUAL SIZE
Plate—¼ in. Thick Only
APPROX. LIGHT TRANSMISSION FOR ¼ IN. THICKNESS 77.8%

"FLORENTINE"

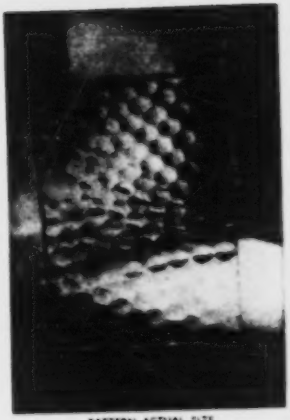
One of America's first and most extensively used figured rolled sheet glass patterns. Purely an ornamental design for partitions or screens where obscurity is desired.



LIGHT DISTRIBUTION CHART

"HAMMERED"

The design is formed by a series of raised adjacent lenses which provide the appearance of a hammered surface. Especially designed for industrial buildings, which are exposed to excessive dirt accumulation as it is classed among the easier glasses to clean. It is obscure and provides good light transmission and distributes light in a circular pattern.

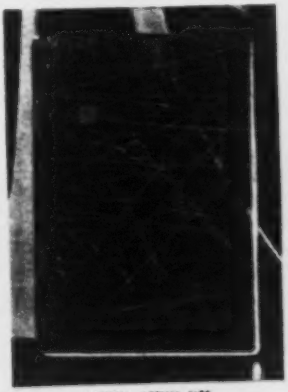


PATTERN ACTUAL SIZE
Plate and Wire Glass, see Page 3 for Thicknesses
APPROX. LIGHT TRANSMISSION FOR ¼ IN. THICKNESS = 0.875

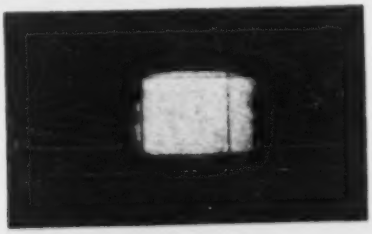
LIGHT DISTRIBUTION CHART

"HYLITE"

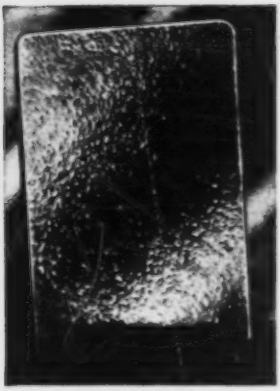
A comparatively clear, irregular pattern designed to transmit a maximum of light. Particularly suited to north elevations to utilize the thoroughly diffused north light without impairing its quality or quantity.



PATTERN ACTUAL SIZE
Plate—⅛ in.-¼ in. Thick
Wire Glass—¼ in. Thick
APPROX. LIGHT TRANSMISSION FOR ¼ IN. THICKNESS = 0.90



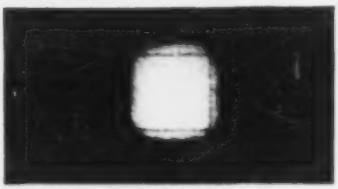
LIGHT DISTRIBUTION CHART



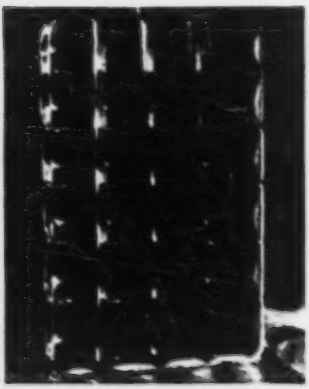
PATTERN ACTUAL SIZE
Plate—$\frac{1}{8}$ to $\frac{1}{2}$ in. Thick
APPROX. LIGHT TRANSMISSION FOR $\frac{1}{8}$ IN. THICKNESS—0.85

"LUXLITE"

A very simple indefinite design. Almost smooth, yet rough enough to obscure vision. An excellent foundation for decorative etchings of glass panels used in artistic lighting screens, fluorescent luminaires, shower doors, and office partitions.



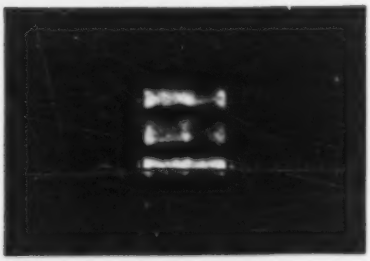
LIGHT DISTRIBUTION CHART



PATTERN ACTUAL SIZE
Plate—$\frac{1}{4}$ in. Thick
Wire Glass—$\frac{1}{4}$ in. Thick
APPROX. LIGHT TRANSMISSION FOR $\frac{1}{4}$ IN. THICKNESS—0.87

"MAGNALITE A"

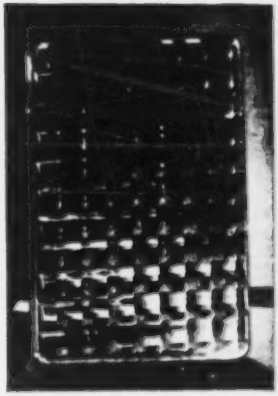
This is an unusual design of figured rolled sheet glass in that it has especially designed cylindrical lenses on each surface, running at right angles to each other—to produce a particular type of light distribution which is most desirable for ceiling light or panel illumination.



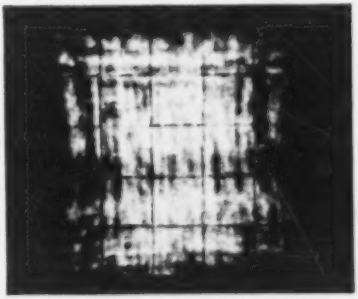
LIGHT DISTRIBUTION CHART

"MAGNALITE B"

The design of this glass is very similar to Magnalite "A," except in size of cylindrical lenses which are smaller and which affords a more uniform distribution of light. So obscure that objects behind the glass are well concealed.



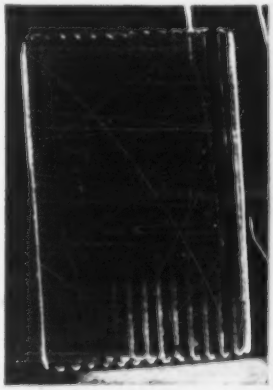
PATTERN ACTUAL SIZE
Plate—$\frac{1}{4}$ in. Thick
Wire Glass—$\frac{1}{4}$ in. Thick
APPROX. LIGHT TRANSMISSION FOR $\frac{1}{4}$ IN. THICKNESS = 0.805



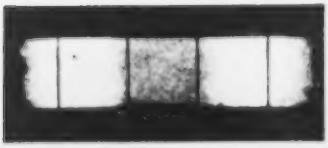
LIGHT DISTRIBUTION CHART

"PENTECOR"

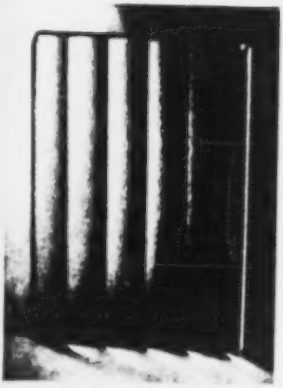
The design consists of approximately eight parallel ribs per inch, forming a light transmission pattern rectangular in shape. A popular glass shield for fluorescent lighting with or without glare-reducing finish.



PATTERN ACTUAL SIZE
Plate $\frac{1}{4}$ in.-$\frac{1}{2}$ in. Thick
Wire Glass—$\frac{1}{4}$ in. Thick
APPROX. LIGHT TRANSMISSION FOR $\frac{1}{4}$ IN. THICKNESS = 0.885



LIGHT DISTRIBUTION CHART

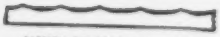


PATTERN ACTUAL SIZE
Plain ¼ in. 7/32 in. thick

"PLURALITE"

A shallow fluted glass especially adapted for use in factories or institutions or in architectural designs where straight line effects are desired.

The fluted surface has a delicately stippled texture which gives the glass an excellent surface, making it suitable for use in the very finest buildings where only the best of quality would be satisfactory.

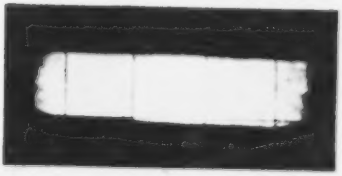


PATTERN CONTOUR ACTUAL SIZE

PATTERN ACTUAL SIZE
Plain and Wire Glass—See Page 3 Thicknesses
BLOCK LIGHT TRANSMISSION DATA IN
THICKNESS

"RIBBED"

The design consists of approximately twenty-two fine parallel ribs per inch, which spread light perpendicularly to the ribs, forming a light transmission pattern rectangular in shape. When installed the ribs should be vertical.



LIGHT DISTRIBUTION CHART

FOR ADDITIONAL INFORMATION ON PAGE 3

"SMOOTH ROUGH"

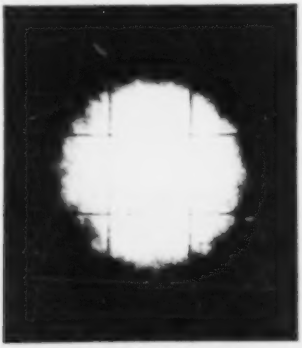
Smooth Rough Glass was designed primarily for use in industrial buildings where normal light transmission was desirable and a glass which would be easily cleaned was preferable. But the surface of this glass is so attractive it has become very popular with architects who specialize in colonial design for all kinds of buildings.

PATTERN ACTUAL SIZE
Plain 1/8 in. Thick
Wire Glass—1/4 in. Thick

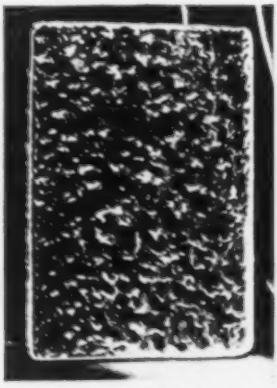
Note: This glass is available west of the Rocky Mountains only.

"SYENITE"

The attractive pebbled design is very attractive, deeply impressed in the surface, highly obscure and unusually brilliant in appearance. Has high transmission and diffuses light in a circular shaped pattern.



LIGHT DISTRIBUTION CHART



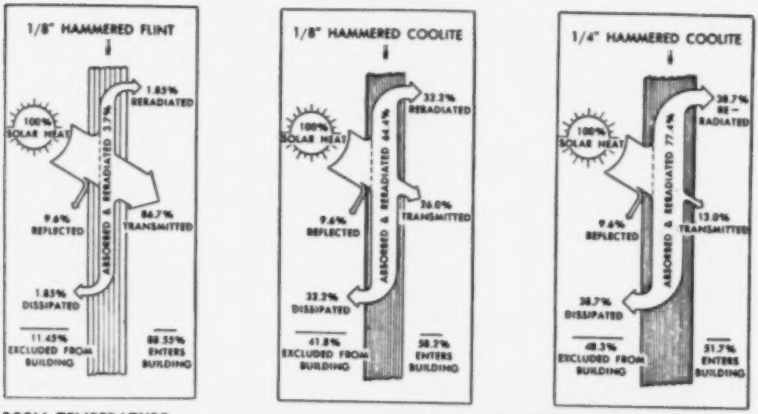
PATTERN ACTUAL SIZE
Plain, Polished and Wire Glass—See Page 3 Thicknesses
REVISED LIGHT TRANSMISSION AND [illegible]
THICKNESS CHARTS

ADDITIONAL INFORMATION ON PAGE 3

"COOLITE"

HEAT ABSORBING GLASS

Coolite Reduces Solar Heat Transmission and Improves Working Conditions



ROOM TEMPERATURE

Tests show that by installing Coolite instead of ordinary glass, room temperature can be reduced about 11°, which means a considerable difference in the comfort of any building in which Coolite is installed. Furthermore, this much reduction in room temperature would naturally reduce the cooling load on any air conditioning equipment, resulting in a saving in maintenance cost.

The following figures show that Coolite glass absorbed a larger portion of the solar radiation than clear or the Ribbed glass. The results of this are indicated by the temperature of Coolite glass, which averaged 11.5° F. higher than the other glasses; the temperature of the floor averaged 20.4° F. lower under Coolite than under the other glasses; and the temperature of the air averaged 11° F. lower under the Coolite than under the other glasses.

In this test, which was to simulate a roof lighting installation, ¼ in. thick glass was used to conform with standard practice.

AVERAGE TEMPERATURE, DEGREES FAHRENHEIT AT LOCATIONS INDICATED

Location	Glass	Air at Center of enclosure	Floor surface
¼" Clear Glass	136°	134.4°	147.6°
¼" Ribbed Glass	124°	135°	147.6°
¼" Coolite Glass	136.2°	123.7°	127.3°

Outside air temperature in shade averaged 97.6° F.

COOLITE TRANSMISSION FACTORS

AVERAGES OF ALL ELECTRICAL TESTING LABORATORIES MEASUREMENTS ON COOLITE FOR TWO YEARS

PATTERN	⅛" Thickness		¼" Thickness	
	Light	Heat	Light	Heat
Polished (Test Sample)	62%	38%	69%	14.6%
Hammered	59%	26%	47%	13%
Hammered, G.R.*	43%	21%	31%	7%

*G.R. DENOTES GLARE REDUCING FINISH.

NOTE The figures for ⅛" thickness are for the average thickness of our "⅛"" glass of .160 inches.

COOLITE HEAT ABSORBING GLASS

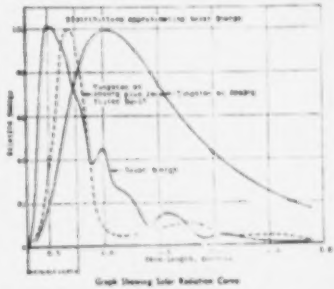
Fundamentally, heat absorbing glass is made to reduce the transmission of solar radiation, which is different from that of an artificial source, such as a so-called heat lamp or projection lamp which emits a very high percentage of infra-red radiation, not possible to obtain from sunlight. Therefore in all tests or demonstrations of heat absorbing glasses, the procedure specified by the National Bureau of Standards should be employed in order to make a true comparison. For example, a glass may be made to transmit very little infra-red radiation of the wave lengths emitted by an ordinary electric lamp but the amount of solar heat transmitted by this glass could be relatively high. Therefore you cannot place different types of glass in front of an electric light and determine which is best for reducing solar heat transmission.

In order to determine the efficiency of any glass, the testing or demonstrating apparatus in which an electric light is used as a heat source, must be equipped with the proper filter to make the artificial heat source comparable to sunlight.

COLOR Coolite is a pleasing cool blue with a greenish cast. Due to inherent manufacturing conditions, we cannot guarantee exact uniformity of color, but it is held within reasonable manufacturing tolerances.

TESTS It has always been our policy to employ a reputable laboratory to make and report tests which we believe will be of interest to our friends who use Mississippi Products.

Any progressive organization must maintain a private research laboratory of some sort in order to control the quality of their products. But for published official engineering information, we believe tests should be made by a reputable independent testing laboratory in accordance with accepted test specifications which enable all laboratories to test materials under identical conditions.



Graph Showing Solar Radiation Curve

As Coolite glass is designed to reduce solar heat transmission, a comparison of curves for sunlight and artificial light, also the corrected curve for a 100-watt 115-volt projection lamp through a 9617 filter which makes the artificial heat source more comparable with sunlight, are given above.

GLARE REDUCING COOLITE GLASS

Where direct sunlight or severe glare from reflecting surfaces is objectionable, and so impairs the vision of employees that inaccuracy or curtailed production results, it is desirable to reduce glare to maintain efficiency and comfort.

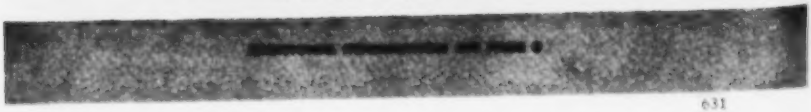
The intensity of light from the sun varies with the seasons and hours of the day. Therefore the location of a building and its exposure to glaring sunlight would determine which type and thickness of Glare Reducing Coolite would best suit the purpose. If the glare is moderate, ⅛-in. Glare Reducing Hammered Coolite would perhaps accomplish the desired results, but if glare is extreme it would be advisable to use ¼-in. Glare Reducing Ribbed Coolite.

The purpose of Coolite glass is to reduce solar heat transmission and if you refer to the preceding page you will see that the surface treatment of Glare Reducing Coolite reduces the direct solar heat transmission considerably.

You can judge from the table of light and heat transmission through Coolite glass of various thicknesses and surface treatment that the Glare Reducing Coolite accomplishes two important results, heat and glare reduction.

The acid treated surfaces, producing a mat finish, reduce the transmission of direct sunlight by thorough diffusion so that a beam of light, whether from the sun or a high reflecting surface, is so completely broken up that the light is spread over a very wide area and the effect of a spotlight in one's eyes is eliminated.

COOLITE WIRED PRODUCT CO., OAKLAND, CALIF.



incandescent lighting . . .

FOR INDUSTRIAL AND COMMERCIAL REQUIREMENTS

1-2-3 LAMP ALUMINUM HIGH BAY REFLECTORS

1-2-3 LAMP STEEL HIGH BAY REFLECTORS

COMBINATION MERCURY-INCANDESCENT REFLECTORS

SLIM STANDARD DOME

GLASSTEEL DOUBLES—THREADED TYPE

VAPORTIGHT UNITS

DIAMOND AND JEWEL DIFFUSE LUMINAIRE

DUPLEXALITE LUMINAIRE

HANGERS AND GLASSWARE

CONCENTRIC RING LUMINAIRE

WINTON LUMINAIRE

The items shown are typical of the broad miller line of metal reflectors, fittings and luminaires for industrial and commercial lighting with fluorescent and mercury lamps.

FIELD SALES ENGINEERS

BALL, R. G.
[illegible] HOOBRIDGE DRIVE
[illegible]BURGH 34, PENNA.

BRIGHTON, A. T.
[illegible] SEGRAVE TERRACE
SAN FRANCISCO 7, CALIF.

BUCK, C. A.
[illegible] W. CATALPA AVENUE
CHICAGO 26, ILLINOIS

CLARKSON, BEN
[illegible] PRESTONSHIRE LANE
DALLAS 5, TEXAS

COX, S. S.
[illegible] LEXINGTON AVENUE
CONNECTICUT, NEW YORK

CROMBIE, JOHN
THE MILLER COMPANY
[illegible] W. 42nd STREET, N. Y. C.

DOUGLAS, R. C.
[illegible] N. E. WASCO STREET
PORTLAND 13, OREGON

DOWLER, J. W.
[illegible] LONE OAK DRIVE
CHATTANOOGA, TENN.

DUNCAN, E. S.
[illegible] BIRCH STREET
DENVER 7, COLORADO

ECOS, W. S.
[illegible] SHERWOOD AVENUE
PEORIA, ILLINOIS

ELLIS, P. C.
[illegible] BRAYTON ROAD
CLEVELAND 12, OHIO

ELLING, I. A.
6 BANCROFT ROAD
COHASSET, MASS.

LEWIS, F. L.
94 WEST COOKE ROAD
COLUMBUS, OHIO

MADDOX, CRAWFORD
2700 CONN. AVE., N. W.
WASHINGTON, D. C.

MARTINSON, A. N.
48 FAIRWAY
BLOOMFIELD, N. J.

MOSER, J. A.
5004 BAILEY AVENUE
ST. LOUIS 7, MO.

PHILLIPS, C. H.
212 WEST NEWLYN STREET
GREENSBORO, N. C.

ROGGE, R. S.
9117 FREMONT AVENUE
DETROIT 29, MICHIGAN

SLEVIN, J. J.
THE MILLER COMPANY
23 W. 42nd STREET, N. Y. C.

STEELE, P. B.
761 ARCADE STREET
ST. PAUL, MINN.

STEWART, T. A.
51 C. PARKWAY APTS.
HADDONFIELD, N. J.

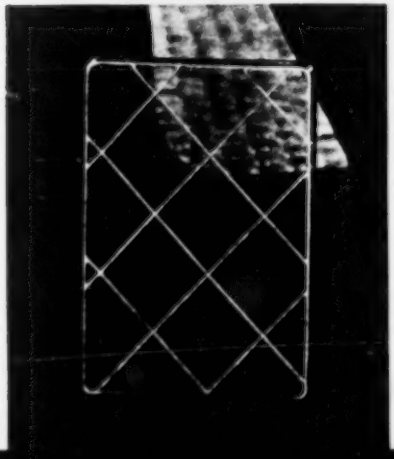
WADE, J. P.
319 S. SIERRA MADRE BLVD.
PASADENA 18, CALIF.

WILCOX, L. T.
84 CARPENTER AVENUE
MERIDEN, CONN.

THE miller COMPANY
MERIDEN, CONN.

632

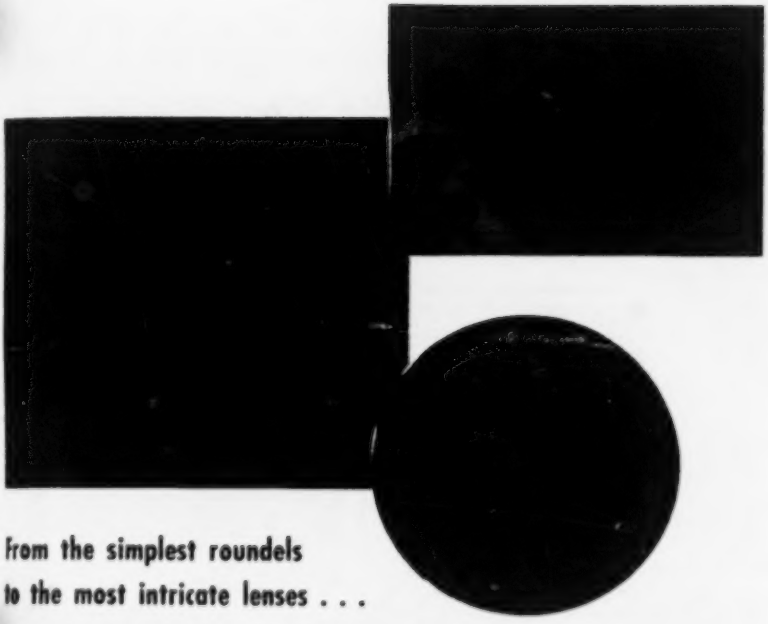
"MISCO"



MISSISSIPPI PRODUCTS

MISCO POLISHED WIRE GLASS	HEAT ABSORBING GLASS
MISCO FIGURED WIRE GLASS	GLARE REDUCING GLASS
STANDARD POLISHED WIRE GLASS	COLORED CATHEDRAL GLASS
STANDARD FIGURED WIRE GLASS	CORRUGATED WIRE GLASS
ROLLED FIGURED GLASS	CORRUGATED GLASS (Without Wi
POLISHED FIGURED GLASS	ULTRA VIOLET TRANSMITTING (Vitaglass)

Defendant's Exhibit 6



from the simplest roundels
to the most intricate lenses . . .

KOPP GLASS

meets your most exacting requirements...

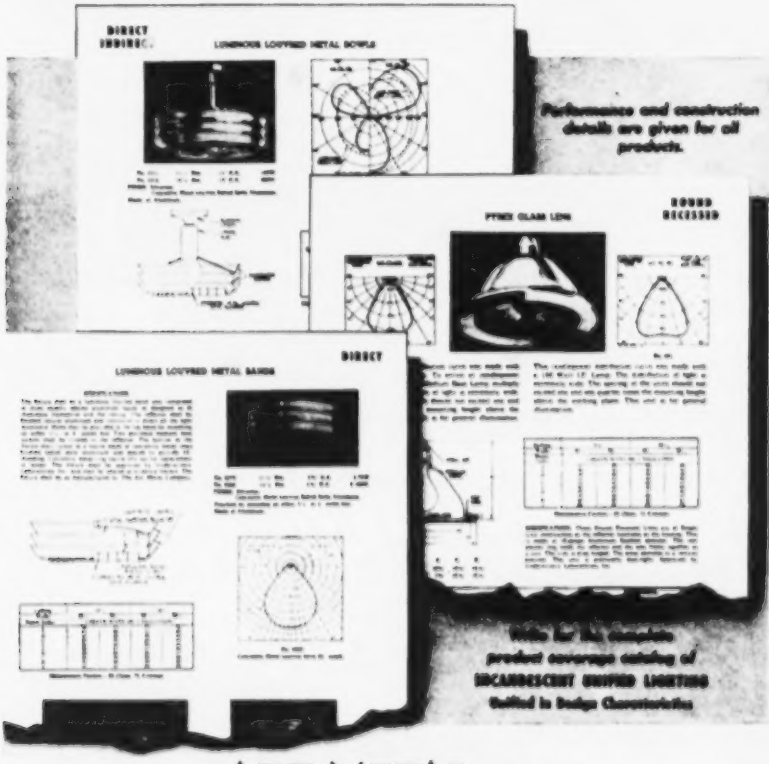
When you specify KOPP lenses, roundels, color filters or other glass parts, you are assured of highest quality. Being specialists in the manufacture of technical glassware for lighting and industrial applications, Kopp provides exceptional engineering, research and production facilities for the design, testing and making of parts to meet your most exacting requirements.

KOPP

KOPP GLASS, Inc.
SWISSVALE, PA.

5'72

ART METAL gives explicit data to speed specification writing and installation planning for all types of INCANDESCENT LIGHTING



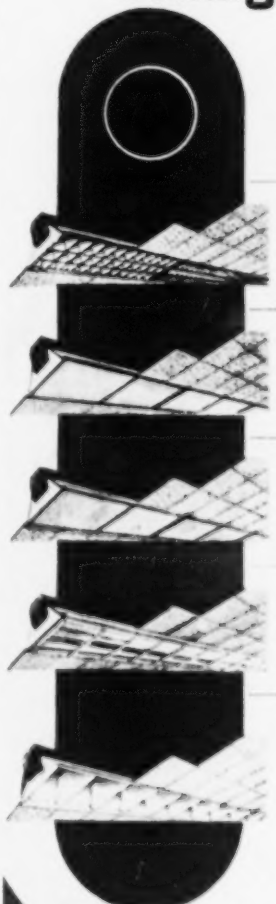
THE ART METAL COMPANY
CLEVELAND 3, OHIO

Manufacturers of Engineered Incandescent Lighting

Defendant's Exhibit

ceilings unlimited* FLUORESCENT TROFFER LIGHTING

31a
MI



Miller Fluorescent Troffer Lighting Systems provide great flexibility of application which increases the functional value of lighting for stores, offices, schools, showrooms and other commercial areas. The patented Miller Ceiling Furring Hanger allows easy, economical fitting of Troffer units in an unlimited variety of ceiling patterns and lighting effects. Shown here are various types of Miller Troffers which will meet a broad range of commercial lighting requirements.

1-2-3 LAMP SHALLOW STEEL TROFFER
HINGED METAL LOUVER DOOR

For **general line** or **slimline** lamps, sizes from 24" to 96". Baked enameled 20-gauge steel construction. Standard reflector or finishing flange reflector. Louver assembly provides 30° shielding crosswise and lengthwise.

1-2-3 LAMP SHALLOW STEEL TROFFER
ALBALITE GLASS OR CORNING TWINLENS

For **general line** or **slimline** lamps, sizes from 24" to 96". Baked enameled 20-gauge steel construction. Standard reflector or finishing flange reflector. Hinged panel door with opalescent diffusing Albalite ribbed sheet glass lens or prismatic Corning glass lens.

1-2-3 LAMP SHALLOW STEEL TROFFER
LUCITE! DIAMOND LENS

For **general line** or **slimline** lamps, sizes from 24" to 96". Baked enameled 20-gauge steel construction. Standard reflector or finishing flange reflector. Hinged panel door with diamond-pattern, prismatic Lucite lens.

1-2-3 LAMP SHALLOW STEEL TROFFER
POLYSTYRENE LENS

For **general line** or **slimline** lamps, sizes from 24" to 96". Baked enameled 20-gauge steel construction. Standard reflector or finishing flange reflector. Hinged panel door with clear diffusing or white translucent Polystyrene.

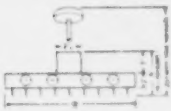
1-LAMP DEEP ALUMINUM TROFFER
REMOVABLE BAFFLES

For **general line** or **slimline** lamps, sizes from 24" to 96" and for 60" T17 low brightness lamps and 85 watt lamps. Baked enameled 20-gauge steel channel. Hinged aluminum reflector and removable aluminum baffles provide efficient, low brightness illumination.

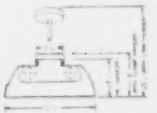
miller
LIGHTING
SINCE 1904

commercial FLUORESCENT LIGHTING SYSTEMS

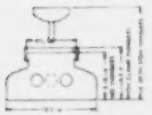
for stores, offices, schools and public buildings



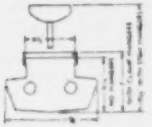
Diffuse type. For 4-8 **general line** or four 4 **slimline** lamps. Individual or continuous row mounting. One-piece, 20-gauge steel wiring channel with baked synthetic aluminum finish. Aluminum end plates and louver shielding assembly. Distribution of light is shielded 35° crosswise and lengthwise.



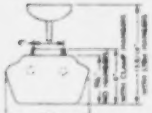
Diffuse type. For 2 **general line** and **slimline** lamps. Individual or continuous row mounting. White enameled, rigid 20-gauge steel wiring channel and aluminum end plates. Reflectors available with Polystyrene side panels or white enameled steel. Available with or without louvers. Light is shielded 34° crosswise and 30° lengthwise.



Semi-direct type. For 2-3 **general line** and **slimline** lamps. Individual or continuous row mounting. White enameled, rigid 20-gauge steel wiring channel and aluminum end plates and shielding assembly. Polystyrene side panels. Available with hinged metal louver door. Lucite Diamond lens or Polystyrene lens.



Semi-direct type. For 2-4 **general line** and **slimline** lamps. Individual or continuous row mounting. White enameled, 20-gauge steel wiring channel and aluminum end plates. Hinged, removable aluminum louver assembly with Polystyrene side panels.

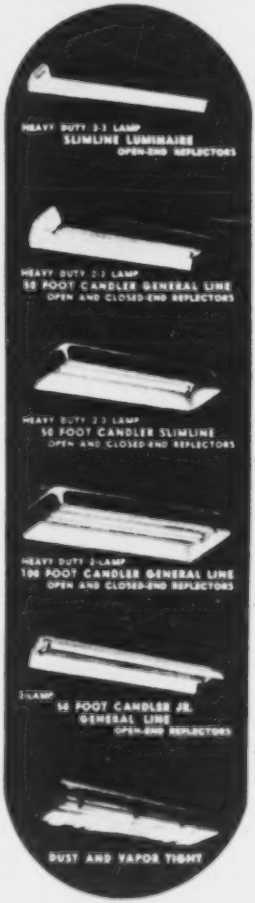


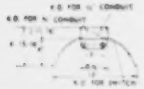
Semi-direct type. For 2 **general line** lamps. Individual or continuous row mounting. White enameled, 20-gauge steel wiring channel and aluminum end plates. Hinged, removable aluminum louver assembly with Polystyrene side panels.

Open type. For 2 **general line** lamps. Individual or continuous row mounting. Standard or turret sockets. White enameled, 20-gauge steel wiring channel and end plates.

industrial FLUORESCENT LIGHTING SYSTEMS

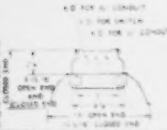
general factory lighting





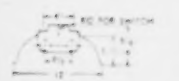
For individual or continuous row mounting. Turret sockets. Baked enameled, one-piece steel wiring channel. Steel reflectors finished in baked enamel or RLM porcelain enamel. For 96" lamps.

For individual or continuous row mounting. Turret sockets. Baked enameled, one-piece steel wiring channel. Steel reflectors finished in baked enamel or RLM porcelain enamel. For 48" lamps.



For individual or continuous row mounting. Turret sockets. Baked enameled, one-piece steel wiring channel. Steel reflectors finished in baked enamel or RLM porcelain enamel. For 48" lamps.

For individual or continuous row mounting. Baked enameled, one-piece steel wiring channel. Reflectors of aluminum or steel finished in baked enamel or RLM porcelain enamel. For 60" lamps.



For individual or continuous row mounting. Turret or standard sockets. Baked white enameled, one-piece steel wiring channel. Steel reflectors with closed or apertured top finished in in baked white enamel or RLM white porcelain enamel. For 48" lamps.

For individual mounting only. U. L. Listed as vapor tight and dust tight for class II group G & F hazardous locations. Housing and door frame of continuous welded steel finished in porcelain enamel. Removable door secured by asbestos tubing and locked by screw clamps. Independently gasketed glass panel of plate glass or shock resistant, full tempered glass.

miller

incandescent lighting . . .

FOR INDUSTRIAL AND COMMERCIAL REQUIREMENTS

RLM STANDARD RE

1-3-3 LAMP ALUMINUM HIGH BAY REFLECTORS

1-3-3 LAMP STEEL HIGH BAY REFLECTORS

COMBINATION MERCURY-INCANDESCENT REFLECTORS

GLASSTEEL DIFFUSE THREADED T

VAPORTIGHT UNITS

DIAMOND AND JEWEL DIFFUSE LUMINAIRE

DUPLEXALITE LUMINAIRE

HANGERS AND GLASSW

CONCENTRIC RING LUMINAIRE

WINTON LUMINAIRE

The items shown are typical of broad Miller line of metal refle fittings and luminaires for industrial commercial lighting with Klamath mercury lamps.

FIELD SALES ENGINEERS

BEALS, E. G.
411 HOMEWOOD DRIVE
PITTSBURGH 34, PENNA.

GREGERSON, A. T.
57 GERMARD TERRACE
SAN FRANCISCO 9, CALIF.

BUSCH, C. E.
3848 W. CATALPA AVENUE
CHICAGO 30, ILLINOIS

CLARKSON, BEN
4407 PRESTONSHIRE LANE
DALLAS 5, TEXAS

COE, E. S.
1520 LEXINGTON AVENUE
SCHENECTADY, NEW YORK

CORNISH, JOHN
THE MILLER COMPANY
10 W. 42nd STREET, N. Y. C.

ENGLISH, R. C.
5814 N. E. WASCO STREET
PORTLAND 13, OREGON

FOWLER, I. W.
2709 LIVE OAK DRIVE
NASHVILLE, TENN.

HEINTZE, E. D.
3045 BIRCH STREET
DENVER 7, COLORADO

HICKS, W. S.
1166 SHERWOOD AVENUE
ELGIN, ILLINOIS

KELLER, P. C.
891 GRATTON ROAD
CLEVELAND 12, OHIO

KLINE, L. A.
6 BANCROFT ROAD
COHASSET, MASS.

LEWIS, F. L.
94 WEST COOKE ROAD
COLUMBUS, OHIO

MADDOX, CRAWFORD
2700 CONN. AVE., N. W.
WASHINGTON, D. C.

MARTINSON, A. N.
48 FAIRWAY
BLOOMFIELD, N. J.

MOSER, J. A.
3204 BAILEY AVENUE
ST. LOUIS 7, MO.

PHILLIPS, C. H.
212 WEST NEWLYN STREET
GREENSBORO, N. C.

ROGGS, R. S.
9117 PREVOST AVENUE
DETROIT 28, MICHIGAN

SLEVIN, J. J.
THE MILLER COMPANY
10 W. 42nd STREET, N. Y. C.

STEELE, P. B.
765 ARCADE STREET
ST. PAUL, MINN.

STEWART, P. A.
51-C PARKWAY APTS.
HADDONFIELD, N. J.

WADE, J. P.
319 S. SIERRA MADRE BLVD.
PASADENA 18, CALIF.

WILCOX, L. T.
44 CARPENTER AVENUE
MERIDEN, CONN.

THE miller COM
MERIDEN, CO

Defendant's Exhibit F

CROUSE-HINDS

Airport Marker Lights

Fig. 1
Type EKL
Runway and
Taxiway Marker Light

Fig. 2
Type HIRL High Intensity
Runway Marker Light

Fig. 3
Type CPD
Flush Marker Light

Fig. 4
Type VAW Single Fixture
With Type H Globe

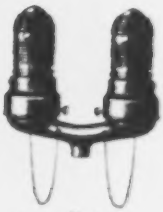


Fig. 5
Type VAW Double Fixture
With Type C Globes

Fig. 6
Type VAW Double
Disconnecting Fixture
on Thompson Hanger

Fig. 7
Type APB
Boundary Light
Unit Mounted Fixture

Fig. 8
Type APD
Flush Marker Light

Fig. 9
Type HG
Boundary Light Marker Light

CROUSE-HINDS

Runway and Threshold Marker Lights

Installation Requirements

Fig. 1
Installation of Type ERL Marker Light on Type CPD Base Housing

Fig. 2
Installation of Type HIRL Marker Light on Type CPD Base Housing

Elevated Marker Lights versus Flush Marker Lights: Elevated marker lights such as the type ERL are now being extensively used for runway marker light installations, in contrast to the flush marker lights used exclusively during past years. Flush fixtures such as the type CPD, however, will continue to be used on many existing installations, and also on new installations where this type of unit is preferred. Advantages of the elevated fixtures are: higher efficiency and candlepower, greater height projects over grass or snow), and lower first cost. Advantages of the flush units are: less hazard to aircraft, and lower maintenance costs for fixture replacements.

High Intensity Runway Marker Lights: High intensity runway marker lights such as the type HIRL are recommended by the Civil Aeronautics Administration for all instrument landing runways. High intensity fixtures are required to define the runway to a pilot under conditions of poor or questionable visibility, as encountered in fog, snow and rain—either day or night. The type HIRL 200-watt high intensity marker light provides powerful beams of light in both directions up and down the runway and also a lower intensity light all around and above the unit.

Arrangement of Runway and Threshold Lights—Large Airports with Paved Runways: Runway marker lights, designed to give a clear asymmetric indication, should distinctly outline the paved runway strip at night. Elevated runway lights should be placed in rows on each side of the runway, not less than 10 feet out from the paved width of the runway. Lights should be arranged in pairs on opposite sides of the runway, and spaced along the edge of the runway as close to 200 feet as practicable. (See Figure 3). At intersections of runways or taxiways, the 200-foot spacing should be maintained if possible, omitting the lights which would be located in the area of the intersecting runway or taxiway.

Flush runway lights should also be placed in rows on each side of the runway, but placed inside the runway paving as shown in Figure 4. Lights should be arranged in pairs as described above for elevated lights.

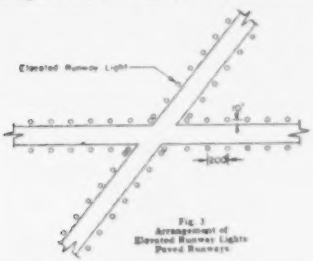


Fig. 3
Arrangement of Elevated Runway Lights Paved Runways

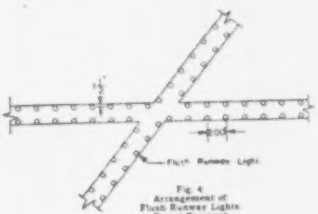


Fig. 4
Arrangement of Flush Runway Lights Paved Runways

CROUSE-HINDS

Type ERL Marker Lights

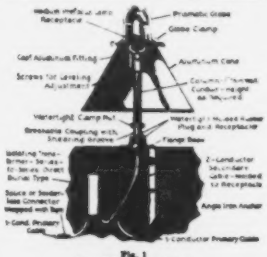


Fig. 1
Type ERL Marker Light
With Style A Mounting Base
Sectional View

Fig. 2
Type ERL Marker Light
With Style B Mounting Base

Type ERL marker lights are constructed in accordance with CAA Specification L-802 to meet new airport lighting requirements for elevated fixtures. These marker lights are for use on both large and small airports, principally as runway lights (clear globe), threshold lights (green globe) and taxi lights (blue globe).

Type ERL marker lights are available with two types of globes, type C and type H. Globes are clamp type, held by two clamps with thumb screws. Globes are available in both asymmetric style as used on runway and threshold lights, and symmetric style, as used for taxi lights at some locations.

Complete ERL fixtures include a globe, fitting with lamp receptacle, cone, column with breakable coupling, wiring in column, disconnecting plug and receptacle and mounting base. Mounting bases are available in three different styles designated as A, B, and C.

The lamps used in ERL fixtures are new types with T-10 bulb and medium prefocus base designed especially for this service. Series units use the 30-watt, 6.6-ampere lamp. Multiple units use the 40-watt, 115-volt lamp. A 45-watt, 6.6-ampere lamp is also available for series units and can be used where a higher intensity is desired.

New Installations: New runway marker light installations use style A mounting in most cases, with a series circuit and an individual isolating transformer for each light. Style C mounting with 115-volt multiple circuit is also used. Style B mounting is used particularly where it is desired to provide for a changeover to semi-flush CPD top assemblies. At some airports these type markers such as type ERL are used during snow weather, these being replaced on the base housings by type CPD top assemblies during summer months.

Conversion of Existing Flush Fixtures: Type ERL with style B mounting is used for converting existing semi-flush CPD fixtures to elevated lights. Base plate can be drilled for any of the different bolt spacings used in the past on different model CPD bases. When converting existing series type CPD contact lights or taxi lights to series units, it is necessary to add an individual series-to-series insulating transformer at each unit. CAA Specification L-804 covers 30/45-watt transformers with 3000-volt insulation, designed particularly for installation in CPD base housings. Dimensions of these transformers do not exceed 6 inches in diameter by 7 inches high. These transformers are not furnished with the fixtures. When converting 115-volt multiple CPD fixtures to ERL fixtures, no insulating transformers are required.

Army-Navy "snowlight" fixtures (distinguished by a small metal cone and a fibre conduit column) can be easily converted to type ERL fixtures, using the style B mounting.

Spacing of Runway Marker Lights: Layout spacing for elevated runway marker lights and green threshold lights is shown on pages 2 and 3 of this section. For new installations with paved runways, the lights are placed at least 10 feet outside the pavement. However, on conversion jobs, existing CPD bases at edges of pavement may be used. On extensions of existing runways, new fixtures should be aligned with existing rows of lights.

Taxi Lights: When used for taxi lights, type ERL fixtures are equipped with blue globes. Both asymmetric and symmetric globes are available for this application. For use at intersections, corners, and short taxiways, the symmetric style is used. The asymmetric style, which provides two main beams, is preferred for long straight taxi strips. For long circuits, or those located a considerable distance from the power supply, a series system is the most economical. However, multiple circuits, using 2-wire, 115-volt system or 3-wire, 230/115-volt system, are preferable in many cases, particularly for short and medium length circuits and for small groups of fixtures on a circuit.

Type	Style of Mounting	Type of Circuit	Runway Lights With Clear Globe Asymmetric	Threshold Lights With Green Globe Asymmetric	Taxi Lights With Blue Globe Asymmetric	Taxi Lights With Blue Globe Symmetric
			Cat. No.	Cat. No.	Cat. No.	Cat. No.
ERL	A	Series	44376	44377	44378	44386
	B	Series or Multiple	44379	44380	44381	44387
	C	Multiple	44370	44371	44372	44384

Catalog numbers do not include incandescent lamps.

CROUSE-HINDS

Type ERL Marker Lights

Globes: Prismatic glass, in two types, with asymmetric and symmetric horisontal light distribution, arranged to meet CAA performance requirements. Globes are clamp type with flange at bottom. Positioning of asymmetric globe is accomplished by means of slots in globe flange which fit pins on fitting flange. Two globe styles, type C and type H, are available. Type C is single-piece Fresnel style Pyrex glass. Type H is two-piece prismatic globe assembly with smooth outer surface. Orders should specify whether type C or type H is desired. If not specified, orders will be filled on the basis of stocks available.

Fitting Assembly: Cast aluminum with flange at top to take globe and with outer sloping section arranged to hold cone. Globe is held by means of two clamps with thumb screws. Base of fitting is slip-fitter for 1" thin wall conduit, and is provided with adjustment screws for leveling fitting and globe assembly.

Lamp Receptacle: Medium prefocus phenolic type (Cat. No. KL6168).

Lamps: For series circuits—30-watt, 6.6-ampere, T-10 bulb, medium prefocus base, aviation service. For multiple circuits—40-watt, 115-volt, T-10 bulb, medium prefocus base, aviation service. A 45-watt, 6.6-ampere, T-10 bulb lamp is also available for series circuits and can be used where a higher intensity is desired.

Column: Standard one-inch thin wall steel conduit. Overall height of fixture with standard column is 16" above ground to top of globe. When specified, however, length of column can be furnished to provide overall height of 20", 25" or 30". Column fits into breakable coupling at bottom.

Breakable Coupling: Aluminum with shearing groove, designed so that it will withstand static loads from high winds or propeller blasts, but will break when struck horisontally with an impact of two foot-pounds or more. Coupling is arranged with watertight squeese connector at top for column. Lower end of coupling has 1½-12 male thread for threading into mounting base assemblies.

Finish: All metal parts above ground level are finished in chrome yellow baked enamel.

Wiring: A molded rubber watertight type disconnecting plug and receptacle are provided at the base of the column. The plug is furnished complete with rubber covered cable to connect to the lamp receptacle, and the receptacle is furnished with cable to connect to the transformer.

Isolating Transformer: A direct burial type transformer is furnished by the Crouse-Hinds Company with the style A mounting fixtures only. The transformer (Cat. No. FL621) is 30/45-watt, series-to-series, 600-volt insulation, per CAA Specification L-803.

Style A Mounting: Consists of surface flange, anchor assembly and isolating transformer. Flange has threaded hub on top to take breakable coupling and a receptacle pocket on the bottom where the rubber receptacle is clamped to form a watertight fit. Connector bushing will take cable from ⅜" to ⅝" outside diameter. Anchor is angle iron type extending 30" below ground level. This mounting assembly is designed for use on series circuits.

Style B Mounting: Includes base plate and gasket to fit type CPD base housings. Base housings are not included under catalog numbers of type ERL fixtures. Base plate can be drilled to fit any existing type of CPD base housing. This type of mounting is designed for converting existing CPD fixtures to ERL fixtures, or for new installations where it is desired to use elevated lights in the snow season and CPD top assemblies during the rest of the year. Unless otherwise specified, base plate and gasket are furnished arranged for latest model CPD base housings which take six ⅝" bolts equally spaced on a 10¾" diameter circle. If specified on order, however, base plate and gasket for older model bases using six or eight bolts on an 11⅛" diameter circle can be furnished. ERL fixtures with type B mounting can be used on either series or multiple circuits. Series units require insulating transformer in base housing. Base plate has threaded hub on top to take breakable coupling, and a receptacle pocket on the bottom where the rubber receptacle is clamped to form a watertight fit.

Style C Mounting: Consists of junction box with hub cover on top and two squeese connectors for through-feed cables at bottom. Cover has threaded hub on top to take breakable coupling and a receptacle pocket on the bottom where the rubber receptacle is clamped to form a watertight fit. Squeese connectors in bottom of box are furnished with standard rubber bushings to take cables from ⅜" to ⅝" outside diameter. Bushings for ⅝" to ½" cables and for ½" to ⅝" cables can be furnished. A terminal block is included in box. This mounting assembly is designed for multiple circuits, either 2-wire, 115-volt, or 3-wire, 230/115-volt.

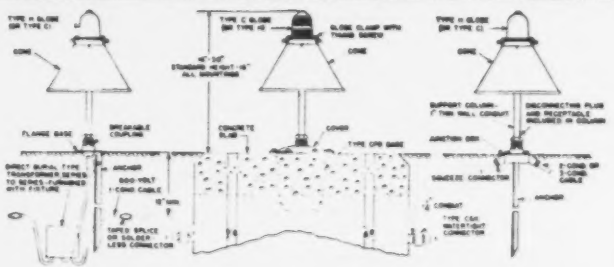


Fig. 3
Type ERL Marker Light
With Style A Mounting Base

Fig. 4
Type ERL Marker Light
With Style B Mounting Base

Fig. 5
Type ERL Marker Light
With Style C Mounting Base

CROUSE-HINDS

Type CPD Flush Marker Lights

Fig. 1
Type CPD
With Shallow Base

Fig. 2
Deep Base
With Blank Cover

Fig. 3
Series Top Assembly

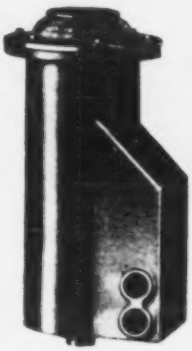


Fig. 4
Type CPD
With Deep Base

Fig. 5
Shallow Base
With Blank Cover

Type CPD flush marker lights are made in accordance with Aeronautical Specification AN-L-6b to meet the combined requirements of the Army, Navy, and Civil Aeronautics Administration. These fixtures are used as runway contact lights, flush threshold lights, flush boundary lights, taxi guidance lights, and flush traffic control lights.

Type CPD units are designed to withstand a minimum dead load of 100,000 pounds applied on the top.

Type CPD bases with blank (no) cover, as shown in Figure 2 and Figure 5 above, are used as underground transformer housings.

Where complete CPD marker lights are ordered for a new installation, bases are shipped with a blank temporary plywood cover similar to those illustrated in Figure 2 and Figure 5, which provides protection for wiring and housing, and keeps interior clean, while construction work is done on the field. The top assemblies with the glass lens will therefore not be subject to damage during this period and can be installed later when required.

Installation: Drawings showing recommended installation details for type CPD marker lights will be furnished on request.

Type I Marker Lights: Type I units are equipped with asymmetric style prismatic lens. Most of the light from an asymmetric unit is concentrated into two narrow beams approximately 180° apart and 1° above the horizontal, which for contact lights is directed up and down the runway to provide a high intensity indication toward a plane landing on the runway.

Type II Marker Lights: Type II units are equipped with asymmetric style prismatic lens. The light distribution is symmetrical throughout the full 360° in the horizontal plane.

Class A Marker Lights: Class A units are arranged for use with multiple type 115-volt lamps. In some cases a 6.6-ampere series circuit is brought in to a series-to-multiple transformer in the base, which provides 115 volts for the lamp.

Class B Marker Lights: Class B units are arranged for use with 325-lumen or 1038-lumen series type 6.6-ampere lamps to be connected directly to a series circuit.

CROUSE-HINDS

Type CPD Flush Marker Lights

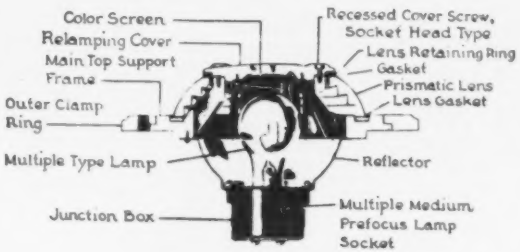


Fig. 6
Multiple Top Assembly
Sectional View

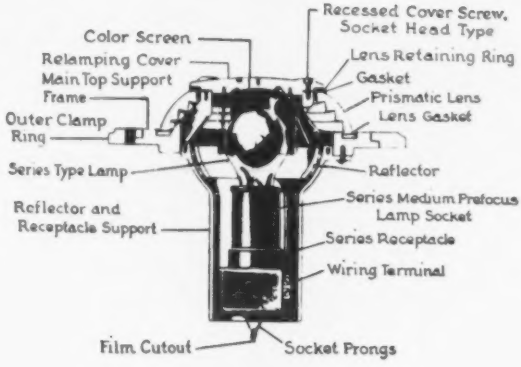


Fig. 7
Series Top Assembly
Sectional View

CROUSE-HINDS

Type CPD Top Assemblies with Adapters

For Early Model CPD Contact Light Bases

Fig. 1
Type CPD Fixture
with Mogul

Fig. 2
Type CPD with
Internal Ribs
Models 1 & 2

Fig. 3
Type CPD with
Internal Ribs
Model 3

Fig. 4
New Type CPD Series Top Assembly
Complete with Reflector,
Socket and Receptacle

The type CPD top assemblies listed below are in accordance with Aeronautical Specification AN L-26 and are furnished complete with adapter ring for installing on any early model CPD contact light base, as manufactured from 1942 to 1952. This includes all models previous to the AN L-26 fixtures and includes three main types as shown in Figures 1, 2, and 3 above.

These top assemblies, which are many times stronger than early model CPD units, are arranged for prefocus base lamps, thus insuring exact positioning of the light source, as not possible with previous models using screw base lamps.

The catalog numbers listed below include the complete top assembly, adapter rings, all gaskets, and all screws. Top assemblies include clear lens, reflector, and lamp receptacle. Color screens are available as listed below in complete 360° style or 180° style for one-way color indication. These should be specified separately.

Lamps used in these multiple top assemblies are 30 or 100-watt, 115-volt, A-21 clear bulbs with medium prefocus base. Lamps used in series units are 125 or 1000-lumen, 6.6-ampere, A-21 clear bulbs with medium prefocus base.

New Type CPD Top Assemblies Complete with Adapter Ring

Description	Lamp	Lens	Cat. No.
Type I, Class A, Top Assembly complete with adapter	Multiple	Asymmetric	KL7044A
Type I, Class B, Top Assembly complete with adapter	Series	Asymmetric	KL7043A
Type II, Class A, Top Assembly complete with adapter	Multiple	Symmetric	KL7046A
Type II, Class B, Top Assembly complete with adapter	Series	Symmetric	KL7045A

Color Screens for Type CPD Top Assemblies

Description	Cat. No.	Description	Cat. No.
360° Aviation Yellow Color Screen	KL6976	180° Aviation Yellow Color Screen	KL3531
360° Aviation Green Color Screen	KL6975	180° Aviation Green Color Screen	KL3532
360° Aviation Blue Color Screen	KL6974	180° Aviation Blue Color Screen	KL7014
360° Aviation Red Color Screen	KL6977	180° Aviation Red Color Screen	KL3530

Catalog numbers do not include incandescent lamps.

CROUSE-HINDS

Type CPD Top Assemblies With Adapters

For Existing CPD Contact Lights

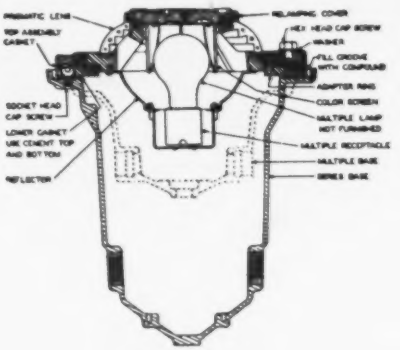


Fig. 5
Type CPD Multiple Top Assembly
On Models 1 and 2 Base

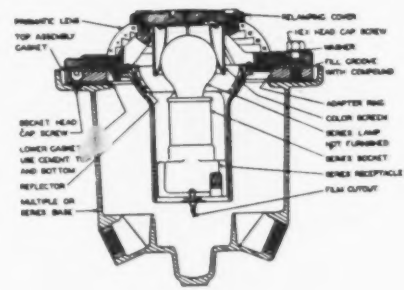


Fig. 6
Type CPD Series Top Assembly
On Model 3 Base

Crouse-Hinds Company
Syracuse, New York
Weather Equipment

Section 305, Page 3
September 3, 1948
(Supersedes Page dated October 15, 1947)

CROUSE-HINDS

Type WC-18 Illuminated Wind Cone Fixture*

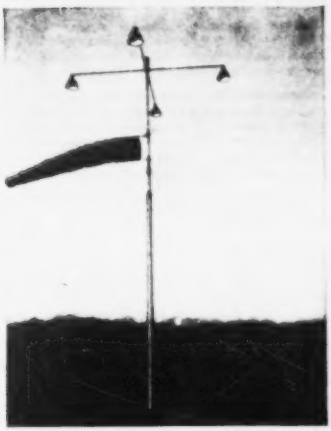


Fig. 1
Type WC-18 on Hinged Standard

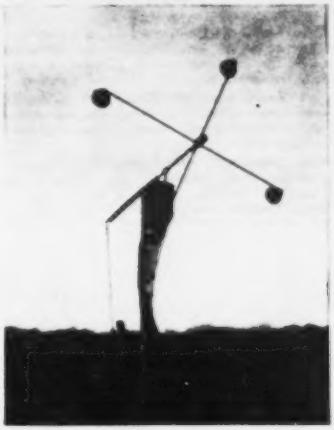


Fig. 2
Type WC-18 on Hinged Standard with Fixture Partially Lowered

Type WC-18 wind cone fixture is constructed in accordance with Specification L-807 of the Civil Aeronautics Administration. This fixture is designed particularly for use at small airports (Class 1 and Class 2). It is also recommended as an auxiliary wind cone at larger airports for installation on the field to supplement the larger type WC-36 wind cone fixture.

The complete type WC-18 fixture assembly consists essentially of a standard 5-foot fabric wind cone, a cylindrical 18" diameter sheet metal cone support, a main vertical pipe support, an obstruction light with red globe, and four 150-watt lighting reflectors. The cylindrical cone support is attached to the vertical support through two weatherproof ball bearings. This cylinder acts as a wind vane and keeps the fabric cone out at a sufficient distance so that it will not tend to wrap around the vertical support.

As required by Specification L-807, the wind cone assembly must be installed on a hinged standard which will provide a height of at least 16 feet from the ground or roof to the center of the cylindrical cone support. For supporting the type WC-18 fixture at this height, a standard 14' 8" high is needed. The standard is usually installed at ground level on a concrete base in a location sufficiently remote from buildings and other obstructions where eddies and false wind indications will not occur.

Type	Description	With Hinged Standard Cat. No.	Without Standard Cat. No.
WC-18	Complete Fixture with External Reflectors and Obstruction Light	44481	44036
	Fixture less Obstruction Light and Reflectors	44482	44478
	Fixture with Obstruction Light, less Reflectors	44483	44479
	Fixture with Reflectors, less Obstruction Light	44484	44480
Hinged Standard only for WC-18		FL1123	
Fabric Cone only for WC-18		FL576	

Catalog numbers do not include incandescent lamps.
*Denotes general revision.

Section 305, Page 4
September 3, 1948
(Supersedes Page dated October 15, 1947)

Crouse-Hinds Company
Syracuse, New York
Weather Equipment

CROUSE-HINDS

Type WC-18 Illuminated Wind Cone Fixture

***Fabric Cone:** Waterproofed nylon fabric, standard size, 8 feet long, 18 inches in diameter at one end, 8 inches in diameter at other end. (Cat. No. FL576).

Cone Support: Sheet steel cylinder, 18 inches in diameter by 18 inches long, attached to the two ball bearings by means of two steel strap supports. Clamp ring is furnished for attaching fabric cone to outer end of support.

Ball Bearing Assemblies: Each of the two bearing assemblies consists of a heavy duty ball bearing enclosed in a weatherproof housing. Oil cup fittings are provided for lubrication.

***Pipe Support:** Main vertical support is constructed of extra-heavy 1" galvanized steel pipe. Fitting at top is type GRF Condulet. Horizontal support arms for lighting reflectors are standard ½" galvanized steel pipe. Slip-fitter at bottom is arranged for mounting on top of standard 2" pipe.

***Lighting Fixtures:** Four deep bowl reflector units with ½" side hub are provided for illuminating the wind cone. Fixtures are arranged for 150-watt, 115-volt, PS-25 bulb, medium screw base lamp.

Obstruction Light: Consists of fitting assembly which mounts on the type GRF Condulet. Fitting assembly includes lamp receptacle and standard type red prismatic globe as used on VAW marker lights. Fitting is arranged for 60 or 100-watt, 115-volt, A-21 clear bulb, medium screw base traffic signal lamp.

***Finish:** International Orange on all exterior metal surfaces except lighting fixture reflectors.

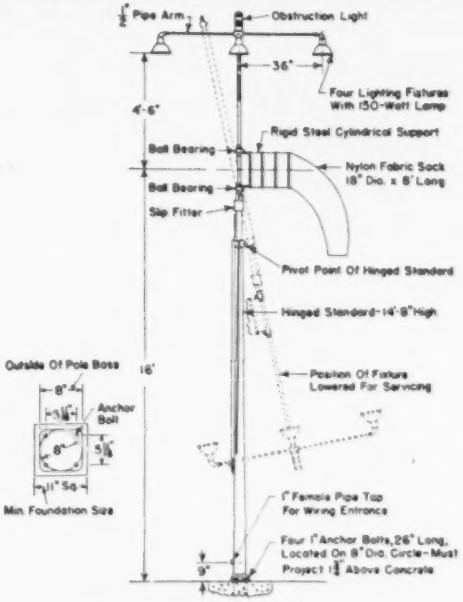


*Fig. 1
Type WC-18 Illuminated Wind Cone Fixture Mounted on Hinged Pole

*Denotes revised information and revised drawing.

Crouse-Hinds Company
Syracuse, New York

Price List AP-106, Page 1
Effective Midnight September 6, 1948
(Supersedes Page dated July 31, 1948)

CROUSE-HINDS

Aviation Lighting Equipment

IMPORTANT: *These prices are not to be used for formal bids.*
All formal bids must be priced by Syracuse Office.

Catalog Number	List Price	Schedule	Section	Pg.
801-A	$ 10.00	A	301 305 307	9 10 3
1780-W	.25 doz.	A	302	18
4077SB	585.00	A	304	3
4078SB	585.00	A	304	3
40926A	45.00	A	302	21
40927A	65.00	A	302	21
40930A	53.00	A	302	21
40931A	53.00	A	302	21
40954A	73.00	A	302	21
40955A	73.00	A	302	21
41028A	45.00	A	302	21
41029A	53.00	A	302	21
41030A	65.00	A	302	21
41031A	73.00	A	302	21
41252C	300.00	A	301	9
41257C	345.00	A	301	9
41258C	345.00	A	301	9
41281B	2800.00	A	301	3
41300A	55.00	A	302	21
41417A	63.00	A	302	21
41418A	63.00	A	302	21
41419A	63.00	A	302	21
42196C	300.00	A	301	9
42197C	345.00	A	301	9
42198C	345.00	A	301	9
42461A	26.00	F	306	6
42462A	31.00	F	306	6
42465A	34.00	F	306	6
42466A	40.00	F	306	6
42482B	585.00	A	304	3
42484A	35.00	F	306	6
42485A	33.00	F	306	6
42487A	27.00	F	306	6
42488A	25.00	F	306	6
42490A	34.00	F	306	6
42491A	26.00	F	306	6
42492A	35.00	F	306	6
42493A	33.00	F	306	6
42495A	27.00	F	306	6
42496A	25.00	F	306	6
42498A	41.00	F	306	6
42499A	39.00	F	306	6
42721A	$ 32.00	F	306	6
42722A	30.00	F	306	6
42938B	585.00	A	304	3
42939B	585.00	A	304	3
42940B	585.00	A	304	3
43037	18.50	A	306	9
43038	14.00	A	306	9
43039	19.00	A	306	9
43040	14.20	A	306	9
43056	68.00	F	306	5
43059	68.00	F	306	5
43060	68.00	F	306	5
43061	68.00	F	306	5
43062	68.00	F	306	5
43063	68.00	F	306	5
43064	85.00	F	306	5
43065	85.00	F	306	5
43066	85.00	F	306	5
43067	85.00	F	306	5
43068	85.00	F	306	5
43069	85.00	F	306	5
43097	33.00	F	306	15
43170B	585.00	A	304	3
43171B	585.00	A	304	3
43338C	2800.00	A	305	5, 6
43339C	2000.00	A	305	5, 6
43354	1750.00	A	301	7
43355	1520.00	A	301	7
43356	1555.00	A	301	7
43357	1685.00	A	301	7
43387	95.00	F	306	8
43472	40.00	F	306	15
43492	2800.00	A	301	4A
43494C	6500.00	A	305	5
43502	92.00	A	302	17
43543	26.00	F	306	6
43544	26.00	F	306	6
43545	31.00	F	306	6
43564	33.00	F	306	6
43565	33.00	F	306	6
43566	38.00	F	306	6
43567	34.00	F	306	6
43568	34.00	F	306	6
43569	39.00	F	306	6
43570	35.00	F	306	6
43571	$ 35.00	F	306	6
43572	40.00	F	306	6
43579	34.00	F	306	6
43580	34.00	F	306	6
43581	39.00	F	306	6
43615	34.00	F	306	6
43616	34.00	F	306	6
43617	40.00	F	306	6
43621	23.00	A	302	11
43622	46.00	A	302	11
43623	35.00	A	302	11
43624	70.00	A	302 304	11 4, 5
43625	95.00	A	302	13
43627	98.00	A	302	13
43629	98.00	A	302	13
43640A	125.00	A	302	17
43641A	126.70	A	302	17
43642A	128.40	A	302	17
43643A	125.00	A	302	17
43644A	126.70	A	302	17
43645A	128.40	A	302	17
43646A	126.40	A	302	17
43648A	119.00	A	302	17
43649A	120.70	A	302	17
43650A	122.40	A	302	17
43651A	119.00	A	302	17
43652A	120.70	A	302	17
43653A	122.40	A	302	17
43654A	122.40	A	302	17
43658	68.00	A	302	23
43659	44.00	A	302	23
43672	40.00	F	306	6
43673	40.00	F	306	6
43674	46.00	F	306	6
43675	41.00	F	306	6
43676	41.00	F	306	6
43677	47.00	F	306	6
43678	42.00	F	306	6
43679	42.00	F	306	6
43680	46.00	F	306	6
43687	41.00	F	306	6
43688	41.00	F	306	6
43689	47.00	F	306	6
43700A	128.40	A	302	17
43701A	122.40	A	302	17
43702A	171.00	A	302	17

Schedules of discounts sent on request.
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Crouse-Hinds Company
Syracuse, New York

CROUSE-HINDS

Aviation Lighting Equipment

Catalog Number	List Price	Schedule	Section	Pg.
43703A	$172.70	A	302	17
43704A	174.40	A	302	17
43705A	171.00	A	302	17
43706A	172.70	A	302	17
43707A	174.40	A	302	17
43708A	174.40	A	302	17
43710A	174.40	A	302	17
43711A	165.00	A	302	17
43712A	166.70	A	302	17
43713A	168.40	A	302	17
43714A	165.00	A	302	17
43715A	166.70	A	302	17
43716A	168.40	A	302	17
43717A	168.40	A	302	17
43719A	168.40	A	302	17
43720	98.00	A	302	13
43727	500.00	A	303	5
43728	600.00	A	303	5
43872A	128.40	A	302	17
43873A	122.40	A	302	17
43874A	174.40	A	302	17
43875A	168.40	A	302	17
43898	46.00	A	302	17
43900	360.00	A	305	9
43902	24.00	A	302	12
43903	28.00	A	302	12
43905	*	A	305	11
43921	20.00	A	302	11
43923	32.00	A	302	11
43925	23.00	A	302	11
43927	35.00	A	302	11
43931	70.00	A	302	11
43932	96.00	A	302	11
43943	*	A	305	11
43950	64.00	A	302	23
43955	40.00	A	302	23
43956	18.00	A	302	11
43957	21.00	A	302	11
43958	21.00	A	302	11
43961	42.00	A	302	11
			304	4, 5
			305	7
43999	66.00	A	302	11
44035	800.00	A	301	5
44036	200.00	A	305	3
44046	410.00	F	306	7
44108C	6000.00	A	305	5
44107C	6900.00	A	305	5
44109	11,500.00	A	303	1
44127	65.00	A	301	9
44135	51.00	F	306	6
44136	64.00	F	306	6
44137	53.00	F	306	6
44138	47.00	F	306	6
44139	52.00	F	306	6
44140	65.00	F	306	6
44173	150.00	A	305	9

Catalog Number	List Price	Schedule	Section	Pg.
44239	$120.00	A	306	11
44247	390.00	A	306	3
44279	280.00	A	306	1
44280A	230.00	A	306	1
44331	98.00	A	301	11
44332	81.00	A	302	13
44333	84.00	A	302	13
44334	84.00	A	302	13
44335	84.00	A	302	13
44366	480.00	F	306	7
44370	68.00	A	302	7
44371	70.00	A	302	7
44372	70.00	A	302	7
44373	85.00	A		
44374	87.00	A		
44375	87.00	A		
44376	90.00	A	302	7
44377	92.00	A	302	7
44378	92.00	A	302	7
44379	65.00	A	302	7
44380	67.00	A	302	7
44381	67.00	A	302	7
44382	244.00	A	302	9
44383	*248.00	A	302	9
44384	70.00	A	302	7
44385	87.00	A		
44386	92.00	A	302	7
44387	67.00	A	302	7
44412	28.00	A	301	11
44413	38.00	A	301	11
44414	86.00	A	301	11
44415	98.00	A	301	11
44436	5.00	A	301	11
44448	200.00	A		
44474	*246.00	A		
44475	*246.00	A		
44478	115.00	A		
44479	145.00	A		
44480	180.00	A		
44481	*370.00	A		
44482	*285.00	A		
44483	*315.00	A		
44484	*350.00	A		
44501	95.00	A		
44502	97.00	A		
44503	97.00	A		
44504	97.00	A		
44621	220.00	A	305	1
44622	300.00	A	305	1
45000	54.00	A	305	9
45741	46.00	A	306	10
45742	46.00	A	306	10
45743	46.00	A	306	10
45744	46.00	A	306	10
45745	76.00	A	306	10
45746	76.00	A	306	10

Catalog Number	List Price	Schedule	Section	Pg.
45747	$ 76.00	A	306	10
45748	76.00	A	306	10
45749	132.00	A	306	10
45750	134.00	A	306	10
46397	196.00	A	301	9, 10
46440	165.00	A	301	10
46441	190.00	A	301	10
46442	215.00	A	301	10
46777A	85.00	A	301	10
46778A	115.00	A	301	10
46779A	115.00	A	301	10
46798	750.00	A	303	5
46799	500.00	A	303	5
46800	600.00	A	303	5
46801	750.00	A	303	5
46802	800.00	A	303	7
46803	800.00	A	303	7
46813	3700.00	A	303	3
46814	3700.00	A	303	3
AJ2330	25.00	CR	306	17
AJ2330S	77.30	CR	306	17
AJ2343S	56.05	CR	306	17
AJ3567S	91.05	CR	306	17
AJX90	18.95	CR	306	17
AJX9548	110.00	CR	306	17
AJX9578	75.00	CR	306	17
AJX9598	98.25	CR	306	17
AJX9980	43.95	CR	306	17
APJ3383	8.40	CR	306	17
APJ3385	8.40	CR	306	17
APJ3483	9.20	CR	306	17
APJ3485	9.20	CR	306	17
APJ6383	11.75	CR	306	17
APJ6385	11.75	CR	306	17
APJ6483	12.75	CR	306	17
APJ6485	12.75	CR	306	17
CGB396	1.00	CR	302	10
CGB398	1.00	CR	302	14
CGB397	1.00	CR	302	14
CGE [illegible]	1.45	CR	302	14
FL83	85.00	A	302	17
FL84	91.00	A	302	17
FL85	85.00	A	302	17
FL86	91.00	A	302	17
FL101	245.00	W	305	7
FL102	275.00	W	305	7
FL103	140.00	W	305	7
FL104	85.00	W	305	7
FL105	150.00	W	306	7
FL106	96.00	W	305	7
FL107	6.00	W	305	7
FL108	6.00	W	305	7
FL140	52.00	A	301	6
			307	3

Schedules of discounts sent on request.
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Crouse-Hinds Company
Syracuse, New York

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CROUSE-HINDS

Aviation Lighting Equipment

Catalog Number	List Price	Schedule	Section	Pg
FL217C	$ 10.00	A	307	2
FL217H	10.00	A	307	2
FL221	10.00	A		
FL222C	10.00	A	307	2
FL222H	10.00	A	307	2
FL224	8.00	A		
FL275	2.00	A		
FL527	12.50	A		
FL576	32.00	A		
FL597	95.00	A	305 307	10 2
FL621	31.00	A	302	8
FL623	8.00	A	305	1
FL624	450.00	A	306	1, 2
FL629	10.00	A		
FL677	22.00	A		
FL938	12.00	A		
FL949	4.00	A		
FL1008	14.50	A		
FL1009	12.00	A		
FL1010	12.00	A		
FL1075	98.00	A		
FL1123	*170.00	A		
FL1135	55.00	A		
FL1252	35.00	A		
FL1258	60.00	A		
GASKET	.40	A	302	12, 14, 24
HG10	6.10	A	302	25
HG11	6.70	A	302	25
HG12	6.70	A	302	25
HG15	6.70	A	302	25
HG16	6.70	A	302	25
HG20	6.20	A	302	25
HG21	6.80	A	302	25
HG22	6.80	A	302	25
HG25	6.80	A	302	25
HG26	6.80	A	302	25
HG30	6.30	A	302	25
HG31	6.90	A	302	25
HG32	6.90	A	302	25
HG35	6.90	A	302	25
HG36	6.90	A	302	25
HGC10	6.30	A	302	25
HGC11	6.90	A	302	25
HGC12	6.90	A	302	25
HGC15	6.90	A	302	25
HGC16	6.90	A	302	25
HGC20	6.50	A	302	25
HGC21	7.10	A	302	25
HGC22	7.10	A	302	25
HGC25	7.10	A	302	25
HGC26	7.10	A	302	25
HGC30	6.70	A	302	25
HGC31	7.30	A	302	25
HGC32	7.30	A	302	25
HGC35	7.30	A	302	25
HGC36	7.30	A	302	25
HGL10	$ 6.30	A	302	25
HGL11	6.90	A	302	25
HGL12	6.90	A	302	25
HGL15	6.90	A	302	25
HGL16	6.90	A	302	25
HGL20	6.50	A	302	25
HGL21	7.10	A	302	25
HGL22	7.10	A	302	25
HGL25	7.10	A	302	25
HGL26	7.10	A	302	25
HGL30	6.70	A	302	25
HGL31	7.30	A	302	25
HGL32	7.30	A	302	25
HGL35	7.30	A	302	25
HGL36	7.30	A	302	25
HGT10	6.50	A	302	25
HGT11	7.10	A	302	25
HGT12	7.10	A	302	25
HGT15	7.10	A	302	25
HGT16	7.10	A	302	25
HGT20	6.80	A	302	25
HGT21	7.40	A	302	25
HGT22	7.40	A	302	25
HGT25	7.40	A	302	25
HGT26	7.40	A	302	25
HGT30	7.10	A	302	25
HGT31	7.70	A	302	25
HGT32	7.70	A	302	25
HGT35	7.70	A	302	25
HGT36	7.70	A	302	25
HGX10	6.70	A	302	25
HGX11	7.40	A	302	25
HGX12	7.40	A	302	25
HGX15	7.40	A	302	25
HGX16	7.40	A	302	25
HGX20	7.10	A	302	25
HGX21	7.70	A	302	25
HGX22	7.70	A	302	25
HGX25	7.70	A	302	25
HGX26	7.70	A	302	25
HGX30	7.50	A	302	25
HGX31	8.10	A	302	25
HGX32	8.10	A	302	25
HGX35	8.10	A	302	25
HGX36	8.10	A	302	25
HL2144	6.50	A	307	3
HL2153	55.00	A	307	3
HL2154	55.00	A	307	3
HL2156	55.00	A	307	3
HL3123	32.00	F	304	5
HL3451	85.00	A	307	3
HL3452	110.00	A	307	3
HL3453	110.00	A	307	3
HL3457	85.00	A	307	3
HL3458	30.00	A	307	3
HL3479	150.00	A	307	3
HL3727	$ 4.00	A	307	3
HL4380	8.00	A	301 307	4, 4B 4
HL4391	64.00	A	301 307	4, 4B 4
HL5192	64.00	A	307	4
HL5324	32.00	A	301 307	6 3
HL5390	150.00	A	307	3
HL5555	6.50	A	302	12
HL5835	35.00	A	307	3
HL5836	60.00	A	307	3
HL5837	55.00	A	307	3
HL5844	25.00	A	301	9
HL5845	25.00	A	301 302	9 12, 14,
HL8019	.80	A	307	24 3
HL6845	3.50	A	307	3
HL8296	3.50	A	307	3
HLS41551G	1.25 doz.	A	302	18
KL750	55.00	A	307	3
KL845	20.00	A	305	9
KL846C	9.00	A	302 307	12 2
KL846H	9.00	A	302 307	12 2
KL847C	12.00	A	302 307	12 2
KL847H	12.00	A	302 307	12 2
KL848C	12.00	A	302 307	12 2
KL848H	12.00	A	302 307	12 2
KL877	2.00	A	307	3
KL882	8.50	A	307	2
KL884	4.00	A	301 307	6 3
KL885	*135.00	A	307	4
KL886	*135.00	A	307	4
KL887	*125.00	A	301 307	4, 4B 4
KL889	*135.00	A	307	4
KL919	3.50	A	307	3
KL932	300.00	A	304	5
KL956	9.00	A	307	2
KL1102	7.00	A	302	22
KL1138	15.00	A	302	13
KL1139A	16.00	A	302	13
KL1158	1.60	A	302 307	22 3

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CROUSE-HINDS

Aviation Lighting Equipment

Catalog Number	List Price	Schedule	Section	Pg.
KL1304	$ 15.00	A	302	13
KL1305A	16.00	A	302	13
KL1489	40.00	A	307	2
KL1609	70.00	A	307	4
KL1774	6.50	A	307	2
KL1934	30.00	A	307	3
KL1936	55.00	A	307	3
KL2057	70.00	A	307	4
KL2216	8.50	A	307	3
KL2287	100.00	A	307	4
KL2521	196.00	A	307	2
KL2569	13.00	A	307	3
KL2602	8.00	A	307	4
KL2603	64.00	A	307	4
KL2850	88.00	A	307	2
KL2865	10.00	A	304 307	4 3
KL2874	160.00	A	307	4
KL2875	170.00	A	307	4
KL2931	220.00	A	307	4
KL2956	180.00	A	307	4
KL3020	180.00	A	307	4
KL3021	160.00	A	307	4
KL3074C	12.00	A	302 307	12 2
KL3074H	12.00	A	302 307	12 2
KL3093	80.00	A	305	7
KL3202	170.00	A	307	4
KL3203	160.00	A	307	4
KL3295	20.00	A	305 307	10 3
KL3301	300.00	A	305	5
KL3530	3.60	A	302	18,19
KL3531	3.60	A	302	18,19
KL3532	3.60	A	302	18,19
KL3680A	12.00	A	302 307	18 3
KL3972	9.00	A	306 307	1 2
KL3979	.70	A	306	1
KL4001	1.30	A	307	3
KL4150	16.00	A	306	1
KL4151	4.00	A	306	1
KL4251	40.00	A	308	1
KL4253	1.30	A	307	3
KL4345	$ 9.00	A	307	2
KL4496	20.00	A	306	12
KL4602	100.00	A	301	4
KL4688	3.50	A	307	3
KL4689	3.50	A	307	3
KL4895	12.00	A	302 307	18 2
KL4903	9.00	A	306	1
KL4968	5.50	A	306	1
KL4969	5.50	A	306	1
KL4992	60.00	A	306	1
KL5029	4.00	A	302 307	18 3
KL5090	80.00	A	302 309	10,18 4
KL5091	10.00	A	302	18
KL5136H	13.00	A	302 307	12 2
KL5139H	16.00	A	302 307	12 2
KL5149	.12	A	302	18
KL5219	95.00	A	307	2
KL5230	17.00	A	302 307	12,18 3
KL5236	9.00	A	302	12,14,18
KL5237	8.00	A	302	12,14,18
KL5238	4.00	A	302	18
KL5240	2.00	A	302	18
KL5242A	12.00	A	302 307	18 3
KL5317	2.00	A	302	13
KL5319	32.00	A	302	13
KL5320	32.00	A	302	13
KL5916	34.00	A	302	18
KL6168	4.00	A	302 307	8,10,12,24 3
KL6195	23.00	A	302	12,13
KL6196	11.00	A	302	12
KL6197	46.00	A	302	12
KL6198	22.00	A	302	12
KL6450	2.50	A	302	18
KL6460	3.50	A	302	18
KL6573C	12.00	A	302 307	12 2
KL6974	4.80	A	302	18,19
KL6975	4.80	A	302	18,19
KL6976	4.80	A	302	18,19
KL6977	4.80	A	302	18,19
KL7014	$ 3.60	A	302	18,19
KL7043A	110.00	A	302	19
KL7044A	104.00	A	302	19
KL7045A	110.00	A	302	19
KL7046A	104.00	A	302	19
KL7120	5.00	A	302 307	18 2
KL7880	65.00	A	305	2
KL8056	12.00	A	305	2
KL8544	9.00	A	302	12,13
KL8545	18.00	A	302	12
KL9723	2.50	A	302	14
KL9724	2.50	A	302	14
KL9768C	8.00	A	307	2
KL9768H	8.00	A	307	2
KL9769C	10.00	A	307	2
KL9769H	10.00	A	307	2
KL9770C	10.00	A	307	2
KL9770H	10.00	A	307	2
KL9772C	10.00	A	307	2
KL9772H	10.00	A	307	2
KL9861	170.00	A	301	6
KL9868	125.00	A	301	48
V153	2.60	A	302	25
VAP810	3.50	A	307	2
VAP811	4.00	A	307	2
VAP812	4.00	A	307	2
VAP815	4.00	A	307	2
VAP817	4.00	A	307	2
VAP840	4.00	A	307	2
VAP841	4.50	A	307	2
VAP842	4.50	A	307	2
VAP845	4.50	A	307	2
VAP847	4.50	A	307	2
VN51	3.20	A	302	25
VN52	3.20	A	302	25
VN55	3.20	A	302	25
VN58	3.20	A	302	25
YYP95	3.25	CR	306	17
YYP96	3.50	CR	306	17
YYP97	3.75	CR	306	17
YYP98	4.00	CR	306	17
YYP99	4.25	CR	306	17
YYP900	2.75	CR	306	17
YYP910	4.50	CR	306	17
YYP9011	4.75	CR	306	17
YYP9012	5.00	CR	306	17

Schedules of discounts sent on request.
Prices and other information on this page are not guaranteed and are subject to change without notice.

CROUSE-HINDS

Explosion-Proof and Weather Resistant (Raintight)
Type RCDE-8 Floodlights

Class I, Group D

Fig. 1
Type RCDE-8
With Suspension Mounting

Fig. 2
Type RCDE-8
With Trunnion Mounting

Fig. 3
Type RCDE-8—Portable

Type RCDE-8 is designed to meet the requirements of an explosion-proof floodlight.

It is recommended for use around oil refineries, chemical plants, and for lighting spray booths from the outside. For short range lighting, the wide beam etched Alzak reflector should be used; for longer range or for spotlight applications, the polished Alzak reflector provides a narrower beam.

As a portable unit, the aluminum door and housing are usually preferable on account of weight. Aluminum should be used where the unit will be subjected to hydrogen sulphide fumes.

Description		Housing	Door	Net Wt.	With Narrow Beam Polished Alzak Reflector		With Wide Beam Etched Alzak Reflector	
					Cat. No.*	List, each	Cat. No.*	List, each
RCDE-8	With Trunnion Mounting For Permanent Installation (Fig. 2)	Feralov	Aluminum	52 lbs.	41719A	▲	41720A	▲
		Feralov	Brass	67 lbs.	41721A		41722A	
		Aluminum	Aluminum	53 lbs.	41723A		41724A	
		Brass	Brass	71 lbs.	41725A		41726A	
	With Trunnion For Suspension Mounting (Fig. 1)	Aluminum	Aluminum	52 lbs.	41980A	▲	41980A	▲
		Feralov	Aluminum	49 lbs.	41981A		41982A	
		Brass	Brass	69 lbs.	41983A		41984A	
	Portable Unit With Handle and Wheel Base (Fig. 3)	Aluminum	Aluminum	35 lbs.	41727A	▲	41728A	▲

Catalog numbers do not include incandescent lamps.
Any of the above units with narrow beam reflector will be arranged for use with 150-watt, P25-bulb lamps without extra charge, if specified on the order.
*If grid is not desired, deduct $1.50 from the list prices.
▲See Floodlight Catalog Number Index for prices.

HAZARDOUS LOCATIONS

CROUSE-HINDS

Explosion-Proof and Weather Resistant (Raintight)
Type RCDE-8 Floodlights

Class I, Group D

HAZARDOUS LOCATIONS

Housing: Cast Feralloy, cast aluminum, or cast brass.

Door: Cast aluminum or cast brass. A threaded joint with at least five full threads is provided between the door and the housing. Four blind holes are provided in the door to facilitate tightening or removing it. Two $\frac{1}{4}$-inch bolts or steel pins at least $2\frac{1}{2}$ inches long can be placed in two of these holes and a bar used across them.

Reflectors: 8-inch, wide beam etched Alzak, for short range (Cat. No. KLA19); or narrow beam polished Alzak, for long range (Cat. No. KLA20).

Mountings: Suspension—A steel trunnion with a threaded fitter for $1\frac{1}{2}$-inch pipe. It is recommended for hanging the unit from the ceiling, and is especially adaptable for lighting spray booths.

Trunnion—A steel trunnion with cast aluminum base for mounting the unit permanently but leaving it free to be tipped vertically or turned horizontally. Special bases can be supplied.

Portable—The portable unit is provided with a carrying handle and a wheel base large enough to permit the floodlight to stand by itself.

Lamp Receptacle: Porcelain medium screw base (Cat. No. HL8019).

Wiring: The wiring chamber is separated from the floodlight housing by a wall and the point where the wires pass through the wall is sealed with a special compound. Ample room is provided for splicing. A threaded cover is provided for the wiring chamber. Three short leads of asbestos-covered wire are furnished. One wire is grounded to the housing. No cable is furnished for portable floodlight units. Three-wire cable, suitable for use in hazardous locations, should be used. A CGB connector for clamping cable from $\frac{1}{4}$ to $\frac{5}{8}$ of an inch diameter is furnished in one hub of the wiring chamber for portable units only. Floodlights with trunnion mounting should be installed with rigid conduit and types ECG, ECH, ECJ, ECK, or ECL flexible couplings listed in section H, pages 4 and 5.

Lens: $\frac{1}{8}$-inch, plain, impact, and heat-resisting glass. A refracting screen, designed to refract the light in one direction, can be furnished (Cat. No. HL2005). It is mounted underneath the outer lens and can be rotated to throw the light in any one direction.

Lamps: 100-watt, A23 or PS25; 150-watt, PS25; or 200-watt, PS30-bulb lamps. For long range, narrow beam, 150-watt, PZ-bulb concentrated filament lamp should be used. The lamp receptacle bracket is adjustable and can be set for any of these lamps except the 150-watt, P-25 by loosening two screws and sliding the bracket until the lamp filament is at the center of the reflector. Unless otherwise specified on the order, all units are shipped with the lamp receptacle set for the 200-watt lamp. If the 150-watt, PZ-bulb lamp is to be used, a special lamp receptacle and adapter are supplied.

Grid: A heavy cast grid is provided over the lens. It can easily be removed to facilitate cleaning.

Plugs: The portable unit should be equipped with an explosion-proof plug or a BP40 plug for use with FSQ series interlocked plug receptacle and switch Condulets.

Finish: Cast Feralloy housing, cadmium-galvanized. Cast aluminum or cast brass, natural finish.

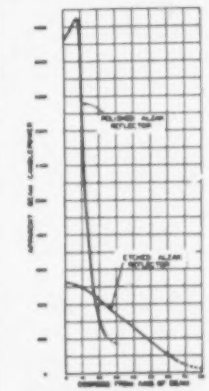


Fig. 4
Light Distribution Curves
RCDE-8 with 200-Watt, 115-Volt, PS30-Bulb, General Lighting Service Lamp

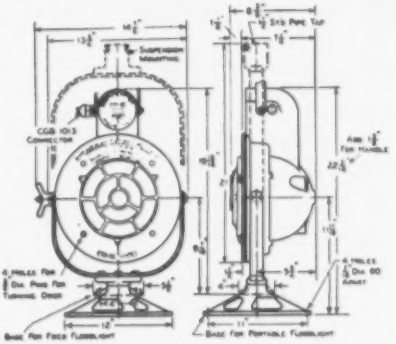


Fig. 5
Dimensions—Type RCDE-8

HAZARDOUS LOCATIONS

Schedule "F" Discounts

CROUSE-HINDS

Explosion-Proof and Weather Resistant (Raintight)
Type RCDE-8 Pit Lights
Class I, Group D

Fig. 1
Type RCDE-8

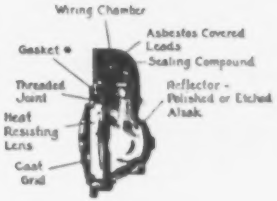


Fig. 2
Type RCDE-8—Sectional View

Fig. 3
Type RCDE-8
With "Z" Brackets

Type RCDE-8 pit light is designed to meet the requirements of an explosion-proof lighting unit. It is recommended for lighting automobile greasing pits and lifts, and for general use in hazardous locations.

When installed in the concrete wall of a pit, the unit is practically flush with the concrete, for the door projection is only $\frac{1}{8}$ of an inch when used without a grid, and $1\frac{7}{16}$ inches when used with a grid. For mounting on the surface of a wall, three steel "Z" brackets can be supplied.

Type RCDE-8 can also be furnished as a floodlight with trunnion mounting for permanent installation or portable use. It is recommended for use around oil refineries, chemical plants, and for lighting spray booths from the outside.

For short range lighting, the wide beam reflector should be used; for longer range or for spotlight applications, the polished Alzak reflector provides a narrow beam.

For installation as a pit light, the cast Feraloy housing and cast aluminum door are recommended. Where alkaline cleaners are used, the cast Feraloy housing and cast brass door are recommended. Aluminum should be used where the unit will be subjected to hydrogen sulphide fumes.

Description		Housing	Door	With Narrow Beam Polished Alzak Reflector		With Wide Beam Etched Alzak Reflector	
				Cat. No.	List, each	Cat. No.	List, each
RCDE-8	Without Brackets* (Fig. 1)	Feraloy	Aluminum	41704A	▲	41702A	▲
		Feraloy	Brass	41705A		41706A	
		Aluminum	Aluminum	41707A		41708A	
		Brass	Brass	41709A		41710A	
	With Three "Z" Brackets* For Surface Mounting (Fig. 3)	Feraloy	Aluminum	41711A	▲	41712A	▲
		Feraloy	Brass	41713A		41714A	
		Aluminum	Aluminum	41715A		41716A	
		Brass	Brass	41717A		41718A	

Prices do not include incandescent lamps.
*Units without brackets are furnished with gaskets of oil and gasoline resisting rubber between door and housing. Other units will be furnished with gaskets without extra charge, if specified on the order.
▲See Floodlight Catalog Number Index for prices.

CROUSE-HINDS

Explosion-Proof and Weather Resistant (Raintight)

Type RCDE-8 Explosion-Proof Pit Lights

Housing: Cast Feraloy, cast aluminum, or cast brass.

Door: Cast aluminum or cast brass. A threaded joint with at least five full threads is provided between the door and the housing. Four blind holes are provided in the door to facilitate tightening or removing it. Two $\frac{1}{2}$-inch bolts or steel pins at least $2\frac{1}{2}$ inches long can be placed in two of these holes and a bar used across them.

Reflectors: 8-inch, wide beam etched Alzak, for short range (Cat. No. KL819); or narrow beam polished Alzak, for long range (Cat. No. KL820).

Lamp Receptacle: Porcelain medium screw base (Cat. No. HL6019).

Wiring: The wiring chamber is separated from the housing by a wall and the point where the wires pass through the wall is sealed with a special compound. Ample room is provided for splicing. A threaded cover is provided for the wiring chamber. Three short leads of asbestos-covered wire are furnished. One wire is grounded to the housing.

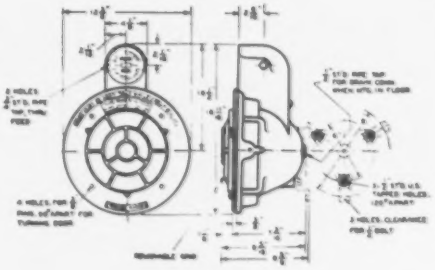
Lens: $\frac{3}{8}$-inch, plain, impact and heat-resisting glass. A refracting screen, designed to refract the light in one direction, can be furnished (Cat. No. HL2005). It is mounted underneath the outer lens and can be rotated to throw the light in any one direction.

Lamps: 100-watt, A23 or PS25; 150-watt, PS25; or 200-watt, PS30 bulb lamps. The lamp receptacle bracket is adjustable and can be set for any of these lamps by loosening two screws and sliding the bracket until the lamp filament is at the center of the reflector. Unless otherwise specified on the order, all units are shipped with the lamp receptacle set for the 200-watt lamp.

Grid: A heavy cast grid is provided over the lens. It can easily be removed to facilitate cleaning.

Finish: Cast Feraloy housing, cadmium-galvanized. Cast aluminum or cast brass, natural finish.

HAZARDOUS LOCATIONS



Dimensions—Type RCDE-8

HAZARDOUS LOCATIONS

CROUSE-HINDS

Type VDA Vaportight Observation Light Fixtures

Class III

Cast Bronze†

Form 100 is furnished with Heat-Resisting Globe V63, and takes 150-Watt Lamps
Form 200 is furnished with Heat-Resisting Globe V93, and takes 200-Watt Lamps
Also furnished with V46 Lamp Receptacle

Vaportight Observation Light Fixture Installation on Brew Kettle

The type VDA vaportight fixtures listed below are for use as observation lights in brew kettles, wort tanks, and cereal cookers.

A polished cast bronze mounting ring furnished as a part of the equipment, is attached to the tank by four rivets or may be located to the tank.

The fixture is of polished cast bronze. It is of the "vaportight" type and is furnished with a heat-resisting globe. The fixture is arranged to slip over the collar of the mounting ring with a close machined fit.

The fixture is furnished with a rubber gland cable connector for flexible cable connection. The fixture may be raised from the mounting ring at any time when necessary to clean the globe or renew the lamp.

Form 100 is furnished with heat-resisting globe V63, and takes 100-watt lamps. Form 200 is furnished with heat-resisting globe V93, and takes 200-watt lamps. Form 100 can also be furnished with heat-resisting globe V183, which takes 60-watt lamps, if specified on the order.

Type	Style	Size Cable	Form 100 Cat. No.	Form 100 List, each	Form 200 Cat. No.	Form 200 List, each
VDA	Complete with Globe, Mounting Rings, and Cable Connector	⅜ to ½ Inch	VDA650E	$19.80	VDA651E	$22.20

Type VDA Vaportight Fixture

Class III

Cast Bronze†

Form 100 is furnished with Heat-Resisting Globe V63 and V46 Lamp Receptacle, and takes 100-Watt Lamps

Type VDA listed below is similar to the one listed above except that it is threaded for rigid conduit and is furnished with gaskets and lock nut. It is intended for mounting inside a brew kettle or similar tank, the hub being inserted in a hole in the tank plate and clamped in place by means of the lock nut.

Type VDA is furnished with heat-resisting globe V63, and takes 100-watt lamps. It can also be furnished with heat-resisting globe V183, which takes 60-watt lamps, if specified on the order.

Type	Style	Size Conduit	Form 100 Cat. No.	Form 100 List, each
VDA	Complete with Gaskets and Lock Nut	½	VDA652E	$10.00

Suffixes (40) and (50) indicate sizes of fixtures. Accessories and parts are correspondingly classified.
If specified on the order, lamp receptacle with lamp grip will be furnished at an advance of $ .20 in the list price.
If specified on the order, pigtail receptacle will be furnished at an advance of $ .50 in the list price.
†Can also be furnished in cast Feraloy.

CROUSE-HINDS

Type WV Vaportight Lighting Fixtures

For Signal Systems or Marine Service

Type WV
Installed on Gooseneck Bracket
Wires Enter Through a Type FK Condulet

Type WV
With Hood for
Inverted Mounting

Police signal boxes, fire alarm boxes, and public hazards such as drawbridges, grade crossings, and ferry slips should be indicated by marker lights that can be seen from a considerable distance.

Type WV meets these conditions. It is provided with a Fresnel lens and is thoroughly gasketed, making it watertight. The hub is cast solid with the body and has an integral bushing and tapered thread. It can be suspended from a goose-neck bracket and the wires run exposed, with a type FK fixture between the type WV fixture and the bracket. When mounted inverted on top of a post or box, a hood can be used to protect the lens.

An adapter, furnished with the 6-inch diameter type WV fixture, is used for focusing 40 or 60-watt A-19 bulb and 75 or 100-watt A-21 bulb lamps. This adapter should be discarded for 100-watt A-23 bulb or 150-watt PS-25 bulb lamps.

The receptacle mounting in the 8-inch diameter fixture is provided with spacers for focusing 75 or 100-watt A-21 or A-23 bulb, 150-watt PS-25 bulb, and 200 or 300-watt PS-30 bulb lamps.

Type WV Fixtures Complete with Fresnel Lens

Illustrations	With 6-Inch Lens Take 40 or 60-watt A-19 bulb, 75 or 100-watt A-21 bulb, 100-watt A-23 bulb, or 150-watt PS-25 bulb lamps. Furnished with Fresnel Lens, Medium Base Receptacle C9514, Receptacle Adapter, and Gaskets			With 8-Inch Lens* Take 75 or 100-watt A-21 or A-23 bulb, 150-watt PS-25 bulb, or 200 or 300-watt PS-30 bulb lamps. Furnished with Fresnel Lens, Medium Base Receptacle C9514 with Adjustable Mountings, and Gaskets			Illustrations
	Cat. No.	List, each	Color Lens	Size Hub	Cat. No.	List, each	
	WV27	$45.75	Clear	¾	WV280	$59.50	
	WV272	53.25	Green		WV282	68.00	
	WV273	53.25	Blue		WV283	68.00	
	WV275	53.25	Red		WV285	68.00	
	WV276	53.25	Amber		WV286	68.00	
	WV37	$46.00	Clear	1	WV380	$59.75	
	WV372	53.50	Green		WV382	68.25	
	WV373	53.50	Blue		WV383	68.25	
	WV375	53.50	Red		WV385	68.25	
	WV376	53.50	Amber		WV386	68.25	

Fresnel Lenses for Type WV Fixtures

	6-Inch Diameter			8-Inch Diameter		
	Cat. No.	List, each	Color Lens	Cat. No.	List, each	
	WV7	$25.50	Clear	WV80	$35.00	
	WVG7	33.00	Green	WV82	43.50	
	WVB7	33.00	Blue	WV83	43.50	
	WVR7	33.00	Red	WV85	43.50	
	WVA7	33.00	Amber	WV86	43.50	

If specified on the order, lamp receptacle with lamp grip will be furnished at an advance of $ .20 in the list price.
*WV fixtures with 8-inch lens can be arranged for certain special lamps. Information on request.

CROUSE-HINDS

Type RCD-8 Vaportight Lighting Fixtures

Fig. 1
Type RCD-8—Form W
With Hinged Door and Grid
For Wall Mounting

Fig. 2
Type RCD-8—Form F
For Floor Mounting

Fig. 3
Type RCD-8—Form W
With Frame and Grid
For Wall Mounting

Type RCD-8 lighting fixtures are designed for mounting in concrete. Type RCD-8 is made in two styles: one for floor mounting, and the other for wall mounting. If this lighting unit is to be used to illuminate greasing pits or racks, permission for its use should first be obtained from the authority enforcing the National Electrical Code.

Form F for Floor Mounting: Type RCD-8, Form F is designed for mounting in the floor. It is watertight, with a door that overlaps the case, and yet the projection above the concrete is only about $\frac{1}{16}$ of an inch. The surface of the door has a rough pebbled surface which prevents it from becoming slippery. It is provided with a wide, flat gasket between the door and the case.

It is provided with a flat lens which is heavy enough to allow it to be stepped on and offers great resistance to tools or other articles that might be dropped on it. The lens is heat treated to increase its resistance both to impact and to a static load; it is approximately four times as strong as heat-resisting glass, and is practically unbreakable under any condition normally encountered. This special glass is available only in the plain type.

Form W for Wall Mounting: Type RCD-8, Form W is similar to Form F, except it is provided with a hinged and flush door, so that it can be set flush with a concrete wall. It can also be mounted on a ceiling or wall by using the brackets listed on the following page. This fixture provides perfect lighting for pits, underpasses, tunnels, and wash-racks. The refracting lenses can be set to refract the light either up or down.

APPLICATIONS

Automobile Lifts: Type RCD-8, Form F fixtures installed under a lift provide lighting of a high intensity, thereby speeding up the operations of greasing and repairing cars. Wheel type lifts are those in which the car is driven onto two trough-shaped tracks and the car rests on its wheels. This type can usually be lighted with two units mounted on the center line. The axle type lifts are those which raise the car with girders under the axles, leaving the wheels free. This type must usually be lighted with four units mounted two on each side, in order to eliminate shadows cast by the girders or frame of the lift.

The recommendations are the same for both rotating and non-rotating lifts, since it is practical to keep a rotating lift in a fixed position in line with the lights while working on the car. If special conditions require that a car on a rotating lift be lighted uniformly regardless of its position after being raised, additional units must be installed.

A tapped drain hole for ½-inch pipe is provided in the bottom of the unit. When installed in the floor, it is recommended that a pipe be used to drain condensation and to maintain atmospheric pressure inside the unit.

Pits: A short pit should have at least four units, long pits require fixtures spaced not more than 12 feet apart. Type RCD-8, Form W is recommended. It can be installed absolutely flush with the concrete wall. Units should be mounted as close to the top of the pit as possible. *Pits which are considered hazardous locations should be lighted with type RCDE-8 explosion-proof pit lights, listed in this section.*

Underpasses and Tunnels: Type RCD-8, Form W fixtures can be installed in the side walls or the ceiling of an underpass or tunnel. For side wall mounting, the units should be mounted 10 to 12 feet above the roadway, with refracting lenses turned so as to project the light downward. For ceiling mounting, plain lenses should be used, except in the case of one-way traffic, when the refracting lenses can be used for projecting the light in the direction of traffic. The spacing and number of units required for any installation depends on the width of the roadway and the intensity desired. Complete recommendations for lighting any underpass or tunnel will be given on receipt of detailed plans.

Washracks: Type RCD-8 fixtures provide effective lighting for automobile washracks. The units can be mounted in the side walls and will provide high intensity lighting on the sides of the cars. The units should be installed on 4 to 6-foot centers with one row of units mounted 7 to 8 feet high with refracting lenses set to project the light downward; and another row installed in the wall near the floor, with refracting lenses for projecting the light upward. Complete recommendations for lighting any washrack will be given on receipt of detailed installation plans.

CROUSE-HINDS

Type RCD-8 Vaportight Lighting Fixtures

HOUSING: Cast Feralun, dust-tight, vaportight, and weatherproof. Cast aluminum housing can also be furnished at an advance of $2.00 in the list price.

DOOR FRAME: **Form W**—Held against housing by four ¼-inch hex. head cap screws. These cap screws are necked so that they do not need to be removed. The four screws can be loosened with a socket wrench; the door can then be pulled open by grasping the two screws on the side opposite the hinge. A gasket is provided between the door and housing. **Form F**—The door is not hinged to the case. It is held against the case with 8 flush, flathead screws.

REFLECTOR: 8-inch, etched Alzak. A polished Alzak narrow beam reflector can be furnished at an advance of $3.00 in the list price.

MOUNTING: **Floor Mounting**—Any unit installed in the floor should be provided with a ½-inch drain pipe connecting the tapped drain hole in the bottom of the housing with a sewer. This provides a drain for condensation and maintains atmospheric pressure inside the unit. If connection to a sewer is not practical, the drain pipe can be run several feet into the ground into a hole filled with crushed stone.

Wall Mounting—Fixtures can be set flush in concrete or surface mounted with a bracket; two types of brackets can be furnished. The "L" bracket can be used for mounting against a wall. The "Z" bracket can be used to attach the unit to the ceiling.

FRAME: A mat or frame (Fig. 3) can be furnished with Form W units. This is useful where the units are to be installed after the concrete is poured. The mat is fastened to the wall with four ¼-inch bolts. The lighting units must be ordered complete with the frame, otherwise they are not drilled and tapped for the frame.

LAMP RECEPTACLE: Porcelain medium screw base (Cat. No. HL40191).

WIRING: Two ½-inch hubs are provided, one on each side of the housing, so that wiring can be carried through the units when several are mounted in a row. The hubs can be tapped 1" if specified, no extra charge. Wire with slow-burning insulation must be used.

LENSES: **Form W**—⅛-inch flat, heat-resisting lens (Cat. No. HL4042) or flat, refracting lens which projects the light in one direction (Cat. No. HL4029). **Form F**—¼-inch, flat, heat-resisting and impact-resisting glass leaded in door. Door complete with lens (Cat. No. KL1431). **Note**: An allowance of $3.00 list will be made for HL4412 (HL4817) door frame less glass if returned in good condition, prepaid.

LAMPS: 100-watt, A23 or PS25; 150-watt, PS25; or 200-watt, PS30-bulb lamps. The lamp receptacle bracket is adjustable and can be set for any of these lamps by loosening two screws and sliding the bracket until the lamp filament is at the center of the reflector.

FINISH: Baked on aluminum enamel.

Net Weight: 21½ lbs. **Shipping Weight**: 30 lbs.

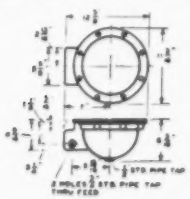
Type		Style	With Plain Lens		With Refracting Lens	
			Cat. No.	List, each	Cat. No.	List, each
RCD-8	Form W Wall Mounting (Fig. 1)	With Grid	41409	▲	41410	▲
		Without Grid	41332		41334	
	Form F Floor Mounting (Fig. 2)	With Impact-Resisting Lens (Leaded in)	41427A	▲		

Brackets and Frame

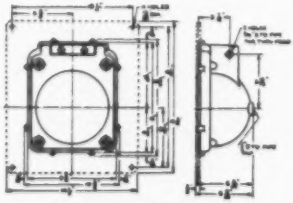
For Type RCD-8 Lighting Fixtures

Description		Cat. No.	List Price, additional
Brackets	"L" Bracket	HL4242	▲
	"Z" Bracket	HL4243	
Frame	For Form W Only	HL5194	▲

Catalog numbers and prices do not include incandescent lamps.
Type RCDE-8 explosion-proof jet lights are listed in this section.
▲See Floodlight Catalog Price Index for prices.



Type RCD-8—Form F Dimensions



Type RCD-8—Form W Dimensions

CROUSE-HINDS

Type VCD-12 Lighting Units

For Roadway Lighting

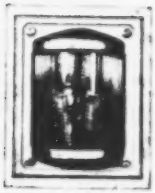


Fig. 1
Type VCD-12

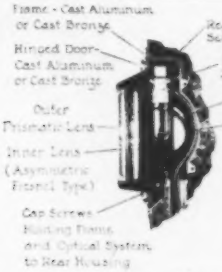


Fig. 2
Type VCD-12—Sectional View

Type VCD-12 lighting units were developed for the illumination of viaducts, bridges, tunnels, and areas of a similar nature where it is desirable to light an area, such as a roadway, by means of low mounted units which confine the light to the roadway and give no glare to either pedestrians or motorists.

Type VCD-12 units concentrate the light into a beam of narrow vertical divergence and the entire beam falls on the road. Top and sidewall have little effect on the lighting as the units are mounted so close to the ground that the roadway is always clearly defined. There is no glare from Type VCD-12 units as the lower is confined below the eye level of both motorists and pedestrians. There are no shadows cast by moving vehicles as the beams overlap to such an extent that every spot on the roadway is lighted from several directions.

These lighting units simplify maintenance. They are mounted low enough to be easily accessible, and yet, on account of the locking screws, cannot be tampered with by unauthorized persons. The focusing of lamps is entirely eliminated by the use of prefocused receptacles, each unit is accurately focused at the factory and the receptacle locked in position. This insures the unit operating at maximum efficiency at all times and makes lamp replacement so simple.

Type VCD-12 is designed to be mounted in a concrete wall or balustrade, and is of an ornamental design.

Description	Housing	Lamp	Complete Unit Cat. No.	Complete Unit List, each	Door and Frame With Optical System Cat. No.	Door and Frame With Optical System List, each	Rear Housing Cat. No.	Rear Housing List, each
VCD-12	Series	Bronze Aluminum	43124 43123	▲	KL1429 KL1426	▲	KL1423	▲
	Multiple	Bronze Aluminum	43126 43125	▲	KL1427 KL1428	▲		

▲ See Headlight Catalog Supplement Index for prices.

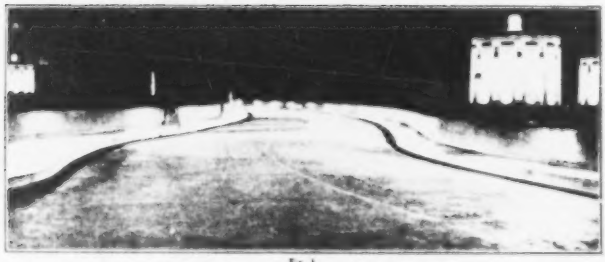


Fig. 3
Main Roadway Across Boulder Dam Lighted with Type VCD-12

CROUSE-HINDS

Type VCD-12 Lighting Units

For Roadway Lighting

Housing: Cast bronze or cast aluminum, dust-tight, and weatherproof.

Optical System: Consists of a set of doublet lenses and a spherical reflector. The doublet lenses are designed to give a horizontal distribution of light of approximately 180°. The spread of the main beam has been purposely kept below 180° so that no glare is thrown down the roadway. The auxiliary beam is approximately 140°, and lights the sidewalk and the near side of the roadway. No light is projected above the horizontal axis. The unit is designed to give an even illumination on the lighted surface from the bottom to the point immediately below the unit.

Installation: See Fig. 4 below. The unit is designed for mounting in a pocket in the wall and is furnished with leveling screws at the top, bottom, and back. A single anchor bolt holds the unit firmly to the back of the recess. For most roadways, the center of the unit should be mounted two feet above the road level.

Lamp Receptacle: Medium prefocus. Lamp receptacles are focused at the factory (Cat. No. H13727).

Wiring Connections: A 1-inch opening is provided on the bottom of the housing. On the inside of the opening is a compound cup for sealing the outlet after the wiring is completed.

Door Frame: Cast bronze or cast aluminum. A gasket is provided between the door and housing.

Door Locking Device: Locking screws are furnished which require special keys, thereby making the entrance to the unit by unauthorized persons impossible.

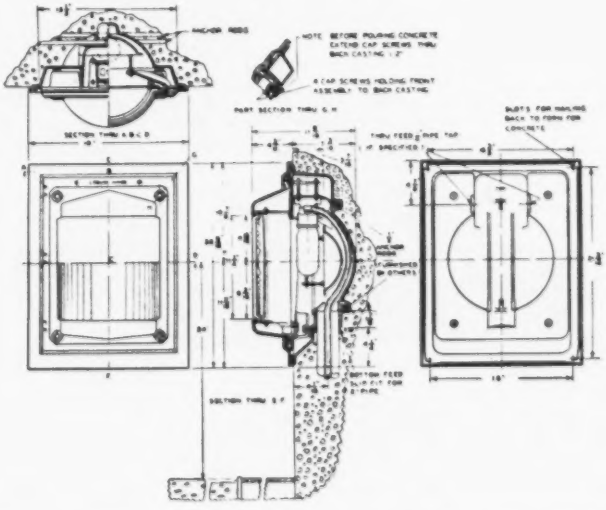
Hinges: Three hinges, concealed.

Lamps: 300-watt, PS30-bulb, 115-volt, medium prefocus base; or 500-watt, G40-bulb, 115-volt Mogul prefocus base lamps. Lamps to be used must be specified on the order.

Finish: Concealed portions of case, natural bronze or aluminum; exposed parts of case and door frame, mottled green on cast bronze units and standard aluminum on aluminum units. Special finishes to comply with architecture of installation can be furnished, if desired.

Net Weights: Cast bronze, 90 lbs. Cast aluminum, 60 lbs.

Shipping Weights: Cast bronze, 115 lbs. Cast aluminum, 85 lbs.



CROUSE-HINDS

Type FS Lighting Units

For Lighting Steps, Floors, Walks, and Gardens

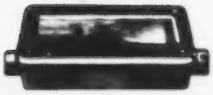


Fig. 1
Type FS—25-Watt

Fig. 2
Type FS—25-Watt
With Cover Removed

Fig. 3
Type FS—6-Watt

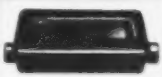
Fig. 4
Type FS—6-Watt
With Cover Removed

Illumination of Stone Stairway
With Type FS Lighting Units

Type FS lighting units are small units made to mount flush in concrete, stone, or plastered walls, and to light steps, walks, floors, and gardens. They can also be used in hospitals, mounted low in the wall for lighting the floor without disturbing patients.

These units have covers equipped with refracting glass, which is normally set to reflect light downward. Two styles are listed: a 25-watt unit and a 6-watt unit, with two hub combinations each, through feed and bottom hubs, which will meet most requirements. However, a wide variety of hub combinations can be furnished using the round unit to mount on a regular FS series single-gang Conduit Box as listed on page 1 of Unit Section D, and the FS cover unit, a regular FS series four-gang Conduit Body as listed on page 23 of Section D.

The receptacles complete with mounting brackets, listed on the next page, can be attached to the standard FS series Conduits, single and four-gang with the screws which are furnished with them.

Illustrations	Cat. No.	List, each	Size	Style	Cat. No.	List, each	Illustrations
(Dead End)	42879 42908 42909	▲	½ ¾ 1	With Aluminum Cover	42877 42916 42917	▲	(Through Feed)
	42880 42910 42911	▲	½ ¾ 1	With Chromium-Plated Brass Cover	42878 42918 42919	▲	
(Dead End)	42904 42905	▲	¾ 1	With Aluminum Cover	42912 42913	▲	 (Through Feed)
	42906 42907	▲	¾ 1	With Chromium-Plated Brass Cover	42914 42915	▲	

Prices do not include incandescent lamps.

Overall Dimensions of Body, exclusive of hubs: 6-Watt—Length, 4¹⁵⁄₁₆ inches; width, 3¼ inches; depth, 2⅛ inches. 25-Watt—Length, 5¼ inches; width, 4¹⁵⁄₁₆ inches; depth, 2⅛ inches.

▲See Floodlight Catalog Number Index for prices.

Schedule "F" Discounts

CROUSE-HINDS

Type FS Lighting Units

For Lighting Steps, Floors, Walks, and Gardens

Housing: Cast Feralloy, cadmium-galvanized. Cast aluminum or cast brass housings can be furnished.

Hubs: The standard hubs on FS units have an integral bushing and tapered thread. They can be furnished with threadless hubs for thick or thin wall conduit; prices on application.

Lamp Receptacles: 6-Watt Units—Candelabra screw base (Cat. No. KL320—List Price, *).

25-Watt Units—Intermediate screw base (Cat. No. KL323—List Price, *).

Covers: Cast aluminum, natural finish or cast brass, chromium-plate polished finish. A gasket is furnished to make a watertight joint with the housing.

Lens: Clear, one-way, refracting, ribbed glass (Cat. Nos. 6-watt, KL315—List Price, *; 25-watt, KL325—List Price, *).

Lamps: 6-Watt Units—6-watt, S6-bulb, clear candelabra base lamp.

25-Watt Units—25-watt, T6½-bulb, clear, intermediate base lamp.

Shipping Weights:

Description	With Aluminum Cover	With Brass Cover
25-Watt Unit, Complete	6½ lbs.	8 lbs.
6-Watt Unit, Complete	3 lbs.	3¼ lbs.
25-Watt Cover	1½ lbs.	3 lbs.
6-Watt Cover	½ lbs.	1½ lbs.

Covers and Receptacles for Type FS Lighting Units

Illustrations	Description	Aluminum Cat. No.	Aluminum List, each	Brass (Chromium-Plated) Cat. No.	Brass (Chromium-Plated) List, each	Size	Cat. No.	List, each	Description	Illustrations
	Covers	KL316	▲	KL318	▲	6-Watt	KL321	▲	Receptacles Complete with Brackets	
		KL326	▲	KL328	▲	25-Watt	KL330	▲		

▲See Floodlight Catalog Number Index for prices

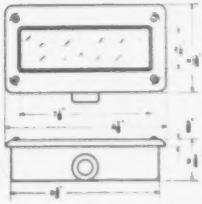


Fig. 6
Dimensions—Type FS, 25-Watt

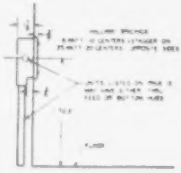


Fig. 7
Installation Details of Type FS Lighting Unit

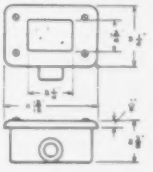


Fig. 8
Dimensions—Type FS, 6-Watt

CROUSE-HINDS

Types LDJ and LD Tender Lamp Fixtures

Types LDJ and LD Fixtures take 25-Watt A17 Bulb, 75-Watt A19 Bulb, or 100-Watt A21 Bulb Lamps Furnished with Clear "Spredlite" Lens, Lamp Receptacle with Lamp Grip, and Gaskets. Type LDJ Conduit Box also furnished with GSG Removable Conduit Hub Plates

Type	Cat. No.	List, each	Size	Std. Pkg. Astd.	Cat. No.	List, each	Type
	With Rectangular Opening and Plain Glass in Bottom						
LDJ	LDJ17 LDJ27	$16.80 17.00	½ ¾	10 10	LD17 LD27	$16.60 16.80	LD
	With Two Round Openings and Semaphore Lens in Sides						
LDJ	LDJ15 LDJ25	$19.20 19.40	½ ¾	10 10	LD15 LD25	$19.00 19.20	LD
	With Front Opening Only						
LDJ	LDJ12 LDJ22	$14.80 15.00	½ ¾	10 10	LD12 LD22	$14.60 14.80	LD

Front Doors and Lenses

For Types LDJ and LD Fixtures

Description	Cat. No.	List, each	Color Lens	Dia. Lens	Std. Pkg.	Cat. No.	List, each	Description
Door Complete (Furnished with "Spredlite" Lens)	LD81 LD82	$5.00 7.50	Clear Red	5¾	10 10	LE71 LE72	$2.00 4.50	Lens Only* "Spredlite"

Types LDBJ and LDBF Tender Lamp Fixtures

For Through Feed Horizontal Conduit

Types LDBJ and LDBF Fixtures take 94-Watt, P25 Bulb Lamps Furnished with 8-Inch Semaphore Lens and Lamp Receptacle with Lamp Grip

Type	Cat. No.	List, each	Size	Std. Pkg.	Cat. No.	List, each	Type
LDBJ	LDBJ1 LDBJ2	$25.00 25.20	½ ¾	5 5	LDBF1 LDBF2	$24.80 25.00	LDBF

For Vertical Conduit in Bottom

Lamp Receptacle

For Types LDJ, LD, LDBJ, LDBF, and LEA Fixtures

Description		Material	Rating	Std. Pkg.	Cat. No.	List, each
Lamp Receptacle	With Lamp Grip	Composition Base	660-W, 250-V.	25	C130	$1.00

Tender lamp fixtures listed on this page are of cast Feralov. They can be furnished in aluminum at an advance in the list price as follows: Types LDJ and LD, $7.00. Types LDBJ and LDBF, $9.00.

*The 3-inch clear semaphore lens (Cat. No. LE73) for the side openings, lists at $1.00.

CROUSE-HINDS

Types LEA, LEBJ, and LEBF Two-Color Tender Lamp Fixtures

These tender lamps or "back-up" lights are provided with a red color screen that may be placed between the lamp and the lens when a red light is desired. In type LEA, the door must be opened to operate the color screen. In types LEBJ and LEBF, the color screen is operated by means of a lever on the outside of the case.

A single rectangular glass-covered opening in type LEA, and two such openings in types LEBJ and LEBF, throw a light downward for coupling and for ground illumination.

Doors, lenses, and openings in the bottom are gasketed, making the fixtures weatherproof.

Type LEA is furnished with C139 keyless lamp receptacle with lamp grip. If specifically ordered, it will be furnished with C131 key receptacle with lamp grip at an advance of $ .40 in the list price, or with the same key receptacle and an operating mechanism similar to that furnished with type LEBJ fixture, at an advance of $1.80 in the list price. If furnished with key receptacle without the operating mechanism, the door must be opened to operate the key receptacle. If specifically ordered, type LEA can be tapped for conduit in the back or at either side.

Types LEBJ and LEBF are furnished with key receptacle C123, which is controlled by an externally operated knob.

Type LEA

Type LEA Fixtures take 25-Watt A17 Bulb Lamps
Furnished with GSG Removable Conduit Hub Plate, 5¾-Inch Clear "Spredlite" Lens, Color Screen, Lamp Receptacle with Lamp Grip, and Gaskets

Type	Size	Std. Pkg. Assorted	Cat. No.	List, each
With Rectangular Opening and Plain Glass in Bottom				
LEA*	½ ¾	10 10	LEA18 LEA28	$20.00 20.10

Types LEBJ and LEBF

Types LEBJ and LEBF Fixtures take 25-Watt A17 Bulb Lamps
Furnished with GSG Removable Conduit Hub Plates, 5¾-Inch Clear "Spredlite" Lens, and Color Screen and Key Receptacle with Lamp Grip, both Externally Operated

For Through Feed Horizontal Conduit

Type	Cat. No.	List, each	Size	Std. Pkg. Asstd.	Cat. No.	List, each	Type
LEBJ	LEBJ18 LEBJ28	$28.50 28.70	½ ¾	5 5	LEBF18 LEBF28	$28.40 28.50	LEBF

For Vertical Conduit in Bottom

Key Receptacle

For Types LEBJ and LEBF Fixtures

Description		Material	Rating	Std. Pkg.	Cat. No.	List, each
Key Receptacle (1¼-Inch Key)	With Lamp Grip	Composition Base	250-Watt, 250-Volt	25	C123	$1.20

Conduit Hub Plates

For Types LDJ, LEA, LEBJ, and LEBF Fixtures

Style	Size	Material	Std. Pkg.	Cat. No.	List, each
One-Hub Plates	½ ¾ 1	Cast Feraloy	25 25 25	GSG61 GSG62 GSG63	$ .50 .60 .70
Blank Plate	...	Cast Feraloy	25	GSG600	$ .40

Tender lamp fixtures listed on this page are of cast Feraloy. They can be furnished in aluminum at an advance in the list price as follows. Type LEA, $6.70. Types LEBJ and LEBF, $7.50.

*List price per hole for Drilling and Tapping: ½ or ¾ inch, $ .40.

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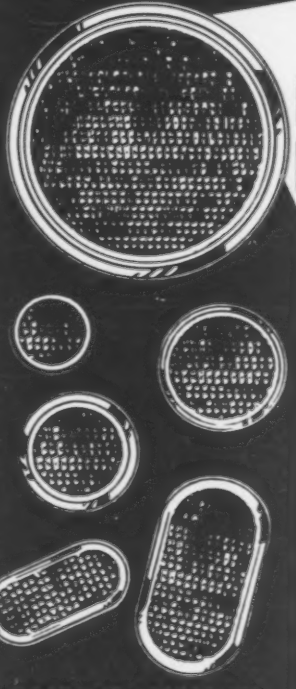
Sign up for GREATER HIGHWAY SAFETY

WITH...

Grotelite PRISMATIC REFLECTORS



Now brighter—more dependable than ever before, Grotelite Prismatic Reflectors are the most effective reflectors for all caution and warning signs. Sealed to protect against dirt and moisture, Grotelite Prismatic Reflectors are brighter—clearly visible at greater range—safer, because they reflect the warning message—impel obedience to the authority of all traffic signs. Grotelite reflectorized signs are the kind that make motorists STOP — LOOK — and LIVE.

FOR FAR-SIGHTED ECONOMY, USE SAFETY-WISE GROTELITE REFLECTORS

Use economical Grotelite Prismatics for signs made in your state or municipal sign shop. Write for details and new low prices.

Grote

The GROTE MFG. CO., INC.

GROTE SQUARE, BELLEVUE, KY.

A GROTE REFLECTORIZED SIGN IS THE BRIGHTEST MESSAGE ON THE ROAD

668-669

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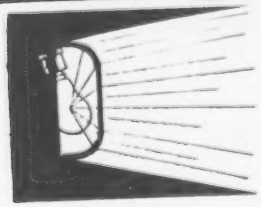
6096



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Every Lacent Prismatic Lighting Unit gives the best possible light distribution whether it is designed for domestic or industrial application. For the lowest installation cost, maximum adaptability and, above all, greatest efficiency rely on Lacent.

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Save Public Lighting Costs

Horstmann Gas Controllers and Comets enable considerable economies to be effected and many more Public Lighting Authorities are adopting them as standard. Enormous savings are made in gas consumption by the elimination of constantly burning by-passes. May we send you full particulars?

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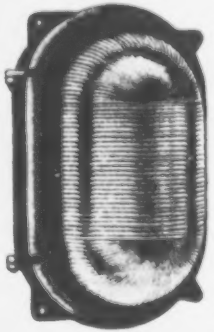


C.13558

Here is an attractive addition to the wide range of Revo lighting equipment—A Bulkhead fitting of alluminium alloy—light yet exceptionally strong and durable.

Features include: prismatic glass with smooth outer surface, weatherproof door with two locking points, fixing holes for vertical or lateral mounting on brickwork, etc., etc.

REVO

Industrial LIGHTING FITTINGS

REVO ELECTRIC CO., LTD., TIPTON, STAFFS

OBFUSCATION*

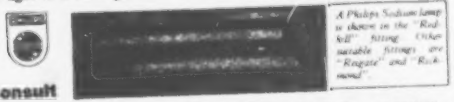
* The act of obscuring, or rendering dark.

in a foundry causes

LOW OUTPUT · POOR QUALITY
BAD MORALE

EMPHASIS on output means emphasis on lighting, for no workman — however willing — can do his best if he's always in his own light, or if the light is a mere glimmer or a blinding glare.

Go-ahead factory managers are installing scientific Philips Sodium or Mercury Lighting — because it gives each man the ideal light for his job.



A Philips Sodium lamp is shown in the "Redhill" fitting. Other suitable fittings are "Regate" and "Richmond".

Consult

PHILIPS ELECTRICAL LTD.

on all lighting problems

LIGHT GROUP, CENTURY HOUSE, SHAFTESBURY AVE., LONDON, W.C.2.

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Streets Ahead!

Specify

EDISWAN

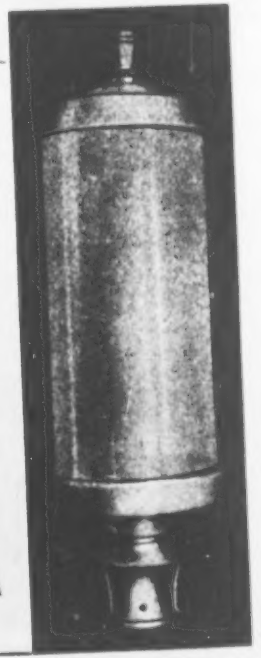
STREET LIGHTING EQUIPMENT
AND ROYAL "EDISWAN" LAMPS

THE EDISON SWAN ELECTRIC CO. LTD. 155 CHARING CROSS ROAD, LONDON, W.C.2.

March, 1952 LIGHT AND LIGHTING

G.E.C.

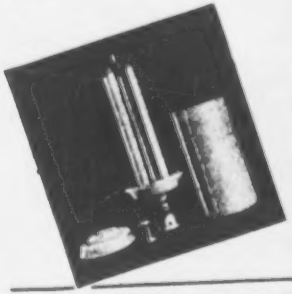
4/40 POST-TOP DECORATIVE LANTERN FOR STREET LIGHTING



The G.E.C. Post-top Decorative lantern has been designed for use with OSRAM 2 ft. fluorescent lamps and is intended for side road lighting. It is also ideally suited for the illumination of promenades, public gardens, balustrades, forecourts, etc.

AMONGST ITS MANY OUTSTANDING FEATURES ARE :—

Cylindrical shaped body of diffusing opal Perspex. Bottom gallery and top pressing of diffusing opal Perspex, provides light around base of column and top of lantern. Smooth exterior for ease of cleaning. Modern design of spigot cap with inset fixing screws. Removable top ornament gives easy access to interior for cleaning and lamp renewal.



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for sodium discharge lamps

THE "FULMAR" LANTERN

Principal features

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- EASILY ERECTED. Lantern and prisms erected in one
- LIGHT WEIGHT. Strength combined with lightness
- EASE OF MAINTENANCE. Due to absence of external prisms

FALKS

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GAS LIGHTING* BRIGHTENS THE HYDE PARK CARRIAGEWAY

The carriageway in Hyde Park, between Hyde Park Corner and Stanhope Gate, has recently had its face lifted—as far as night lighting is concerned! Additional lamp columns have been added; the mounting height of columns has been increased to fifteen feet, and two additional refuge islands have been installed. Moreover, lighting has been further improved by the replacement of former lighting units by new ones of an improved modern type. Now motorists can see how much better street lighting by gas can be!

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C119

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Horstmann Gas Controllers and Cornets enable considerable economies to be effected and many more Public Lighting Authorities are adopting them as standard. Enormous savings are made in gas consumption by the elimination of constantly burning by-passes. May we send you full particulars?

Horstmann Electric Time Switches are renowned for their unfailing reliability. The comprehensive range covers hand wound models (15, 21 and 40-day run), electrically wound and synchronous models with or without spring reserve. May we quote you for your requirements?

HORSTMANN Products for Reliability

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NEWBRIDGE WORKS · BATH · ENGLAND

A DESIGN TO SUIT EVERY LIGHTING SCHEME

The correctly designed prismatic fitting affords the most efficient utilisation of standard lamps for all directional lighting purposes.

The prismatic fitting illustrated has a cast iron body and is fitted with a rubber packing ring and internal mirror. May we have your request for our latest literature?

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ESTABLISHED OVER 30 YEARS

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South African Agent:
Messrs. Wilson & Hord Ltd., New Commercial Exchange Buildings (5th Floor), Harrison St., Johannesburg, P.O. Box 3093

HEYES & COMPANY, LIMITED WATER HEYES ELECTRICAL WORKS WIGAN

dm HC 54

Transformers

By F. C. Connolly, Ph.D., A.M.I.E.E., A.R.C.S., D.I.C. A guide to the principles and design of transformers used in light electrical and radio equipment. With 179 illustrations. 35 - net.

Industrial Electrical Plant Maintenance

By E. G. Annese, M.I.E.E., Chartered Electrical Engineer. Deals fully with d.c. and a.c. motors and their associated control and protective gear. With 88 illustrations. 27 6 net.

PITMAN

Parker Street, Kingsway, London, W.C.2

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The Fastener with Endless Applications

SIMPLE—POSITIVE—SELF LOCKING

Made in a variety of types and sizes

SPECIAL FASTENERS TO SUIT CUSTOMERS' REQUIREMENTS.

USED EXTENSIVELY BY THE LEADING MANUFACTURERS IN THE LIGHTING AND ELECTRICAL INDUSTRIES.

DEPT. L.L.

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Defendant's Exhibit 15

611

G.E.C. Enclosed Sodium Lantern

for Main Road Lighting

The lantern has been designed for main road lighting using an 85 watt or 140 watt OSRAM Sodium lamp. Space is provided within the lantern body to house the auxiliaries necessary to operate the lamp. Among the many outstanding features of the lantern are :—

- Lamp operating gear housed within the lantern body providing a convenient and economical arrangement where it is desired to make use of existing columns which may have no base accommodation for this.
- Optical system comprising specially designed "Perspex" refractor plates.
- Prismatic sides of refractors sealed on the inside of totally enclosing "Perspex" bowl.
- Smooth interior and exterior surfaces for ease of cleaning.
- Easy access to interior for cleaning and lamp renewal by quick release stainless-steel toggle catches and stainless steel hinged supporting ring.
- Single piece die-cast aluminium alloy body supplied either for side entry or top entry fixings.

THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON, W.C.2

Largest ever— by Mazda

Britain's longest stretch of sodium street lighting

More and more public authorities are turning to Mazda for safe and reliable street lighting. In Lanarkshire, 140 watt Mazda sodium vapour lamps in Mazda lanterns provide the longest unbroken installation of this type of street lighting in Britain, giving a uniform light of high intensity along the Glasgow-Carlisle roadway. Here, as in many other parts of Britain, this highly efficient and economical lighting gives exceptional service to motorists, pedestrians and other road users. Public lighting engineers are everywhere finding that Mazda Sodium Vapour Lamps and Lanterns provide lighting of the highest standard at the lowest comparative cost.

Mazda

lamps stay brighter longer

THE BRITISH THOMSON-HOUSTON CO. LTD.
Crown House, Aldwych, London, W.C.2
(Member of the A.E.I. Group of Companies)

Part of the new 7½ miles stretch of Mazda sodium lighting in Lanarkshire.

This Mazda sodium lantern, which is the type used in the Lanarkshire installation is an improved design with lamp support, side panels and an anodised aluminium reflector mounted to form a single optical unit. It is constructed from a high grade alloy, and is designed for either side or top entry. Clear "Perspex" weatherproof cover has quick-release spring latches for easy access.

Defendant's Exhibit 16

612

but it is clear that the light emitted by the lens system itself can be dealt with in two ways as shown in Fig. 5. The light can be condensed in a vertical direction only, so as to be emitted in the form of a horizontal sheet or fan, the light being visible in all directions in azimuth. Such an optical system is known technically as a "fixed lens." Alternatively, the light can be condensed both in elevation and in azimuth. In this second system the effective area that may be brought to bear on any one point is very much increased, giving a much-increased intensity in that direction. As the light is emitted in the form of a conical beam, or pencil of light, it can only be seen in the direction in which it points, and to make it visible in time at any fixed point on the horizon it is necessary to revolve the lens system. Such systems are consequently known as "revolving lights."

Fig. 6 shows a large fixed lens of 920 mm. focal length, built prior to 1900, incorporating reflecting and refracting prisms. A revolving lens of the same focal length, which was made for the Fastnet Rock light and consists of two lenses mounted in biform upon a mercury-float pedestal, is shown in Fig. 7.

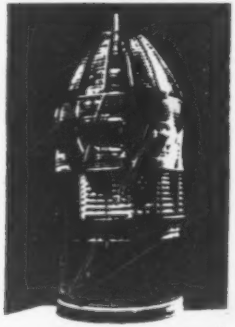


Fig. 6. *(Above)* 1st order fixed lens and pedestal.

Fig. 7. 1st order biform revolving lens and pedestal.

From what has been said above it is fairly obvious that the effective intensity of any lens of this type is given by multiplying the brightness of the source by the area of glass which appears flashed in the given direction, multiplied again by some factor appropriate to the form of lens and which makes allowance for the absorption and reflection losses implicit in the lens itself. With a revolving lens, the area involved is the whole area of glass projected in the direction of the optical axis, but with the fixed lens where a sheet of light is emitted through 360 deg. in azimuth, the effective area seen flashed from any point is the height of the lens multiplied by the horizontal width of the light source (Fig. 8). Many papers[5] have been published to enable the various correction factors to be applied, and a British Standards document BS.942[6] gives appropriate values of the reduction factors for any particular design. From a knowledge of the brightness of the light source and the dimensions of the lens, it is possible to make a fairly accurate approximation to the peak intensity viewed along the optical axis for a revolving lens, or in the horizontal plane for a fixed lens. These figures will correspond closely to what would be obtained by a photometric measurement, but for reasons that will appear later, the figures are not appropriate for calculating the effective intensity of a lighthouse lens under operating conditions.

(4) Conspicuity

The main interest in viewing a lighthouse is to see it as far away as possible in order that a ship approaching the danger point marked by the lighthouse shall have as much warning as possible. A great deal of attention has been given in recent years to establishing the level of illumination at the eye of the observer which enables a light to be seen[7]. As would be expected, this figure is not easy to determine, as not only do different observers have very different sensitivities, but the value also varies with the background illumination. It has been known for many years that the range of a flashing light is appreciably less than the range of the same light when it is not flashing. The original Blondel-Rey experiments[8] were carried out with light sources under laboratory conditions where the rise to maximum intensity of the flash was virtually instantaneous and the cut-off was equally short. They found that all their

Fig. 8. Flashed areas of fixed and revolving lenses.

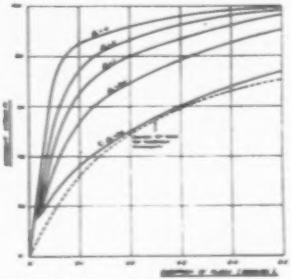


Fig. 9. Fixed light equivalents at different conspicuity levels.

COPY E

Defendant's Exhibit 17

HOLOPHANE COMPANY, INC.

BALANCE SHEET AS OF JUNE 30, 1948

ASSETS

CURRENT ASSETS:		
Cash		$ 565,809.35
Marketable securities—at cost (quoted market value $354,433)		356,927.41
Accounts receivable:		
Trade, less reserve for doubtful accounts $2,000.00	$230,857.26	
Other	18,150.76	249,008.02
Inventories—at the lower of cost or market		293,148.40
Total Current Assets		1,464,893.18
INVESTMENT IN AND ADVANCES TO SUBSIDIARY COMPANIES (at book values, determined from books of subsidiaries):		
The Holophane Company, Limited	215,777.27	
Verlys of America, Inc.	25,961.32	241,738.59
PLANT PROPERTY:		
Land and buildings—at cost	467,223.47	
Machinery, equipment, etc.—at cost	305,754.68	
Molds—at fixed value	70,000.00	
	842,978.15	
Less Reserve for depreciation	403,922.03	439,056.12
PATENTS:		
Cost	58,656.07	
Less Reserve for amortization	29,129.97	29,526.10
DEFERRED CHARGES:		
Unexpired insurance premiums	10,807.38	
Other	11,174.89	21,982.27
		$2,197,196.26

LIABILITIES

CURRENT LIABILITIES:		
Trade accounts payable and accrued expenses (including compensation due to officers and employees)		$ 195,285.48
Accrued Federal income taxes		412,028.93
Accrued taxes—other		12,737.08
Past service liability on employees' pension plan, net of estimated income tax savings		83,088.00
Total Current Liabilities		704,139.49
CAPITAL STOCK AND SURPLUS (See Note):		
Capital stock:		
Authorized, 105,000 shares without par value, issued and outstanding, 98,442 shares, less 4,000 shares in treasury—at stated value of $1.00 per share	$ 94,442.00	
Surplus	1,398,614.77	1,493,056.77
		$2,197,196.26

NOTE: During the year, 4,000 shares of capital stock of the company were purchased for the treasury at a cost of $112,400.00. The Board of Directors has recommended to the stockholders that the certificates be canceled. Accordingly, the capital stock outstanding has been reduced by the stated value of the shares, $4,000.00, and the remainder of the cost has been charged against surplus.

677

FOLD AND CLOSE IN CENTER

HOLOPHANE COMPANY, INC.

CONDENSED STATEMENT OF INCOME AND SURPLUS, YEARS ENDED JUNE 30, 1948 AND JUNE 30, 1947

	Year Ended June 30, 1948	Year Ended June 30, 1947
PROFIT FROM OPERATIONS	$1,098,070.01	$ 776,041.31
PLUS INCOME CREDITS:		
Net income of subsidiaries (after provision for taxes on income and profits), interest from bonds, etc.	126,418.08	103,880.77
GROSS INCOME	1,224,488.09	879,922.08
LESS INCOME CHARGES:		
Pension plan premiums	109,988.84	
Cash discount on sales, etc.	30,581.32	25,232.71
	140,570.16	25,232.71
NET INCOME FOR YEAR BEFORE FEDERAL TAXES ON INCOME AND PROFITS	1,083,917.93	854,689.37
LESS TAXES ON INCOME	410,500.00	300,000.00
NET INCOME FOR YEAR AFTER TAXES ON INCOME	673,417.93	554,689.37
SURPLUS CHARGES:		
Excess of cost over stated value of 4,000 shares of capital stock purchased for retirement	108,400.00*	
Write-down of land from appraised value to cost	18,125.00	
Dividends declared during year	310,936.50	255,949.20
	437,461.50	255,949.20
SURPLUS FOR YEAR	235,956.43	298,740.17
PLUS SURPLUS AT BEGINNING OF YEAR	1,162,658.34	863,918.17
SURPLUS AT END OF YEAR	$1,398,614.77	$1,162,658.34
EARNINGS PER SHARE ON OUTSTANDING STOCK	$7.13	$5.63
NUMBER OF SHARES OF OUTSTANDING STOCK AT END OF YEAR	94,442*	98,442

*See note to Balance Sheet

614

then add production units.

The footnote of the annexed balance sheet explains the purchase of 4,000 common shares, ratification of which will be asked in our coming stockholders' meeting.

The pension plan, approved in last year's stockholders' meeting, has recently been approved by the Treasury Department to become effective retroactive as of July 1, 1947.

As previously announced, the Company observes its Golden Jubilee this year. We respectfully request that you take the fifteen minutes necessary to read the enclosed "Holophane Story" and hope you will find it interesting. We are holding at your disposal, upon request, a small token in the form of a crystal glass paperweight inscribed as a memento of our 50th Anniversary.

At this opportunity, the writer again would like to express his personal appreciation of the loyal cooperation on the part of the officers and employees of the Company. On behalf of the Board I thank our stockholders for their continued interest.

Respectfully submitted,

CHARLES FRANCK,
Chairman of the Board of Directors

New York, N. Y.
October 1, 1948

Defendant's Exhibit 18

AWARD OF HONOR

to the Men and Women of

HOLOPHANE COMPANY
INCORPORATED

NEWARK, OHIO

MAIN OFFICE: 342 MADISON AVE., NEW YORK, N. Y.

616

Presentation

of the

ARMY NAVY "E" AWARD FOR

EXCELLENCE IN WAR PRODUCTION

to the

MEN AND WOMEN

of the

HOLOPHANE COMPANY, INC.

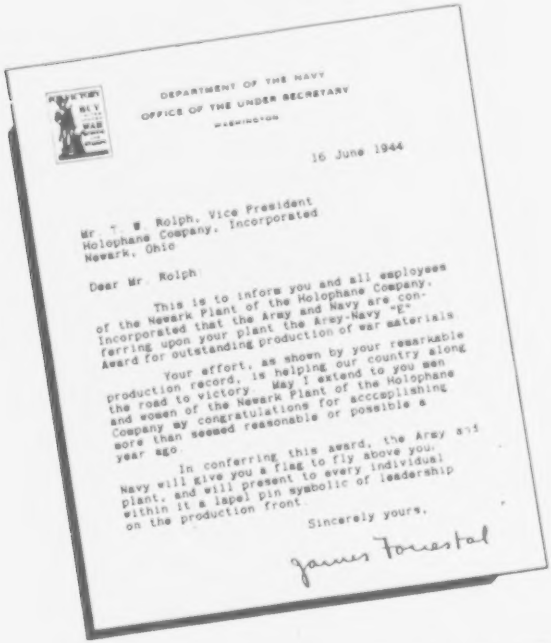
★

LINCOLN SCHOOL AUDITORIUM

NEWARK, OHIO

TUESDAY, JULY 18, 1944, 8:00 P.M.

580



DEPARTMENT OF THE NAVY
OFFICE OF THE UNDER SECRETARY
WASHINGTON

16 June 1944

Mr. T. W. Rolph, Vice President
Holophane Company, Incorporated
Newark, Ohio

Dear Mr. Rolph:

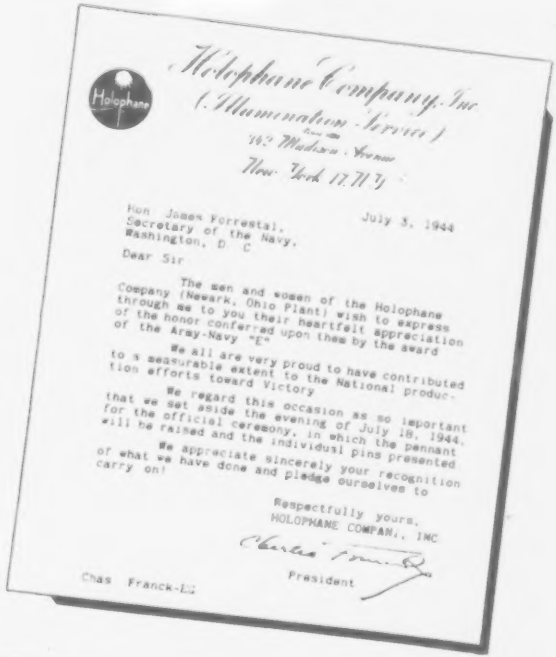
This is to inform you and all employees of the Newark Plant of the Holophane Company, Incorporated that the Army and Navy are conferring upon your plant the Army-Navy "E" Award for outstanding production of war materials.

Your effort, as shown by your remarkable production record, is helping our country along the road to victory. May I extend to you men and women of the Newark Plant of the Holophane Company my congratulations for accomplishing more than seemed reasonable or possible a year ago.

In conferring this award, the Army and Navy will give you a flag to fly above your plant, and will present to every individual within it a lapel pin symbolic of leadership on the production front.

Sincerely yours,

James Forrestal



Holophane Company, Inc.
(Illumination Service)
342 Madison Avenue
New York 17, N.Y.

Hon. James Forrestal, July 5, 1944
Secretary of the Navy,
Washington, D. C.

Dear Sir:

The men and women of the Holophane Company (Newark, Ohio Plant) wish to express through me to you their heartfelt appreciation of the honor conferred upon them by the award of the Army-Navy "E".

We all are very proud to have contributed to a measurable extent to the National production efforts toward Victory.

We regard this occasion as so important that we set aside the evening of July 18, 1944, for the official ceremony, in which the pennant will be raised and the individual pins presented.

We appreciate sincerely your recognition of what we have done and pledge ourselves to carry on!

Respectfully yours,
HOLOPHANE COMPANY, INC.

Charles Franck

President

Chas Franck-ES

Program of Presentation Ceremonies

682

HONORABLE CHARLES W. MONTGOMERY—*Master of Ceremonies*

MUSICAL PRELUDE	Elks Band
"THE STAR-SPANGLED BANNER"	Band and Assembly
POSTING OF THE COLORS	U. S. Navy Color Guard *Denison University*
INTRODUCTION OF HONORED GUESTS	
OPENING ADDRESS	Hon. Charles W. Montgomery
PRESENTATION OF "E" AWARD PENNANT	Commander Reuben Jasperson, USNR Cleveland, Ohio
RAISING OF AWARD PENNANT	Color Guard
ACCEPTANCE OF PENNANT	Charles Franck *President Holophane Co., Inc.*
PRESENTATION OF "E" AWARD PINS	Major Robert S. French *Fifth Service Command Ft. Hayes Columbus, Ohio*
ACCEPTANCE OF "E" PINS	Raymond Blind Martha Thompson Robert Myers Walter Trickey Marsena Sager
ADDRESS	Raymond Blind
"AMERICA"	Band and Assembly
RETIRING THE COLORS	Color Guard
MUSICAL POSTLUDE	Elks Band

619

Significance of Army-Navy "E" Award

In 1906 the Navy instituted in the Fleet an award for excellence which has been known ever since as the Navy "E". First awarded for excellence in gunnery, this was later extended to include outstanding performance in engineering and communications. An honor not easily won nor lightly bestowed, it became and has remained a matter of deep pride to the men of the Service who received it.

When the rising tide of war in Europe placed a premium on the production of war equipment, the Navy "E" award was extended to embrace those plants and organizations which showed excellence in producing ships, weapons and equipment for the Navy.

Then came Pearl Harbor and the high resolve on the part of all Americans to work and fight together until victory in that struggle is total and complete.

From that high resolve was born the Army-Navy Production Award — which stands today as our fighting forces' paint recognition of exceptional performance on the production front of the determined, persevering, unbeatable American spirit which can be satisfied only by achieving today what yesterday seemed impossible.

HONOR ROLL

In the Service of Their Country

Molly Ackerman
Homer Binckley
Harold F. Brown
J. F. Buchanan
Donald Campbell
Paul Chapman
James Coyne
James Cunningham
Paul Cunningham
Paul Davis
John Dean
William Decker
Otis Daniel
Carl G. Franck
Robert Frazer
Vincent Ferraro
Ruth Geiger
David Goldfine
Roy Hankey
Wilson Hartman
George Hinger, Jr.
William Horton
Harlan Jaynes
Charles Johnson
James Keiser
Paul Kellman
Lawrence Kellworth
Sigmund V. Koch
Charles Kornbauer
William Kroemmelbein
Gerald McCabe
Charles Martin
James Mauller
Alice Miller
Clement C. Pickell
Warren Ponser
Robert Pyle
Gene G. Rae
Joseph Richards
Dale Richardson
Clyde Rinker
Leo Sullivan
Harold Thomas
Harry Truck
Paul Truck
Kenneth Van Wy
John Wagenheim
Carl Walters
Leon Weintraub
Richard Weston
Richard Wilson
Frank Zamato

620

AMERICA

My country, 'tis of thee,
Sweet land of liberty, of thee I sing!
Land where my fathers died,
Land of the Pilgrims' pride,
From every mountainside
Let Freedom ring.

THE STAR-SPANGLED BANNER

Oh, say can you see, by the dawn's early light,
What so proudly we hailed at the twilight's last gleaming,
Whose broad stripes and bright stars, through the perilous fight,
O'er the ramparts we watched, were so gallantly streaming?
And the rockets' red glare, the bombs bursting in air,
Gave proof through the night that our flag was still there.
Oh, say does that Star-Spangled Banner yet wave
O'er the land of the free and the home of the brave?

[fol. 685] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

GOVERNMENT'S PROPOSED DECREE—December 1, 1952

This proposed decree is filed accompanying the Government's brief and proposed findings of fact and conclusions of law, pursuant to instructions of the Court.

(S.) Robert B. Hummel, Norman H. Seidler, Harry E. Pickering, Attorneys for the United States.
Dec. 1, 1952.

[fol. 686] IN THE UNITED STATES DISTRICT COURT

PROPOSED FINAL JUDGMENT

Plaintiff, the United States of America, having filed its complaint herein on November 10, 1949, defendant, the Holophane Company, Inc., having filed its answer to said complaint on December 28, 1949; this cause came on for trial June 2, 1952, and the taking of evidence was concluded June 4, 1952. The Court filed its opinion on ——, ——, finding and adjudging the defendant to have violated Section 1 of the Sherman Antitrust Act. (15 U.S.C. Sec. 1). The Court filed findings of fact and conslusions of law herein, pursuant to Rule 52 of the Rules of Civil Procedure, on

Now, therefore, after hearing plaintiff and defendant by their attorneys, it is hereby ordered, adjudged, and decreed as follows:

I

This Court has jurisdiction of the subject matter hereof and of defendant, and the complaint states a cause of action against defendant under Section 1 of the Act of Congress of July 2, 1890, (15 U.S.C., §1), entitled "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies," as amended, commonly known as the Sherman Act.

[fol. 687] II

As used in this judgment:

A. "Prismatic glassware" means glass products generally in the form of lenses, refractors or reflectors, bearing configurations or prisms in the form of lines or circles or both, which are designed to control the distribution and direction of artificial light.

B. "Illuminating appliances containing prismatic glassware" means lighting fixtures employing prismatic glassware to control the distribution and direction of artificial light, commonly used in institutional, commercial and industrial structures and in street and traffic lighting.

C. "Said products" means prismatic glassware and illuminating appliances containing prismatic glassware, or either of them.

D. "Defendant" means The Holophane Company, Inc., a corporation organized and existing under the laws of the State of Delaware, and maintaining offices in New York, New York and a factory in Newark, Ohio.

E. "Limited" means Holophane Limited, a joint stock company organized and existing under the laws of the United Kingdom, with offices and principal place of business in London, England.

F. "Francaise" means La Societe Anonyme Francaise Holophane, a corporation organized and existing under the laws of France, with offices and principal place of business in Paris, France.

G. "Person" means an individual, partnership, firm, association, corporation, or other business or legal entity.

H. "The territory of the defendant" means the continents of North and South America, the islands adjacent thereto, the Philippine Islands and Japan.

I. "The territory of Limited and Francaise" means all areas of the world other than those set forth above as the territory of the defendant.

[fol. 688] III

The provisions of this judgment applicable to defendant shall apply to the defendant, its officers, agents, servants, employees, attorneys, subsidiaries, successors and assigns

and all other persons acting under, through or for the defendant who receive actual notice of this judgment by personal service or otherwise.

IV

Defendant has violated Section 1 of the Act of Congress of July 2, 1890, 15 U.S.C., section 1. Said violation has consisted of defendant and its co-conspirators, Limited and Francaise, engaging in an unlawful combination and conspiracy, and being parties to unlawful contracts, agreements, and understandings, in restraint of trade and commerce in prismatic glassware and illuminating appliances containing prismatic glassware among the several states of the United States and with foreign nations.

V

Each of the following agreements is hereby declared and adjudged to be illegal and in violation of Section 1 of the Sherman Act, and is hereby declared to be cancelled; and the defendant is hereby enjoined and restrained from further performance or enforcement of any of the provisions of said agreements and any agreements amendatory thereof or supplemental thereto:

(a) Agreement dated September 15, 1925, between Holophane Limited and The Holophane Glass Company, Inc., and Holophane Illuminating Company, Inc., commonly referred to as the "Trading Agreement";

(b) Agreement dated as of September 15, 1925, between Holophane Glass Company, Inc., and La Societe Anonyme Francaise Holophane, commonly referred to as the "Trading Agreement";

(c) Agreement dated February 1, 1944, between the defendant and Holophane Limited, which modified the "Trading Agreement" referred to in (a) above;

(d) Agreement dated June 11, 1945, between the defendant and Holophane Limited entitled "Intercompany Buying Agreement."

[fol. 689] VI

Defendant is hereby enjoined and restrained from entering into, performing, enforcing, adopting, adhering to,

maintaining or furthering, directly or indirectly, or claiming any rights under any contract, agreement, arrangement, understanding, plan or program for the purpose of or with the effect of continuing, reviving, or renewing any of the agreements listed in Section V of this Judgment.

VII

Defendant is hereby enjoined and restrained from entering into, performing, adopting, adhering to, maintaining or furthering, directly or indirectly, or claiming any rights under any combination, conspiracy, contract, agreement, arrangement, understanding or concerted plan of action with any manufacturer of said products:

(a) To allocate or divide territories or markets for the production, sale or distribution of said products;

(b) To refrain from competing or to leave any person free from competition in any territory or market in the production sale, or distribution of said products;

(c) To take any steps or to use any means designed to hinder, limit, restrain or prevent the importation into or exportation from the United States of said products.

VIII

Defendant is hereby enjoined and restrained from:

A. Granting or receiving any license, immunity or other rights under any foreign patent or patents except upon a non-exclusive basis;

B. Agreeing to exchange patents, trade-marks, trade-names, technological information or know-how, or commercial information in any country with Limited or Francaise;

C. Agreeing to refrain from seeking patent, trade-mark or trade-name protection in any country;

D. Granting or receiving any technological information or know-how to or from any foreign person except upon a non-exclusive basis;

[fol. 690] E. Granting any person rights under trade-marks or trade-names in any foreign country where the purpose or effect of such grant is to interfere with the exportation from the United States to such foreign country of goods manufactured by the defendant.

F. Receiving from any person rights under trade-marks or trade-names in any country where the purpose or effect of such receipt is to interfere with the importation into such country of goods manufactured by the grantor of such rights.

IX

Defendant is hereby enjoined and restrained from:

A. Referring any order or inquiry or request for literature relating to said products to Limited or Francaise or any subsidiary, agent, sales representative or distributor thereof;

B. Selling or offering for sale to, or purchasing or offering to purchase said products from Limited or Francaise at perferential prices, discounts or terms and conditions of sale;

C. Offering or paying to, or receiving or accepting from Limited or Francaise any commission, rebate, penalty, or other payment in connection with the sale or other distribution of said products to any other person in any territory or market;

D. Utilizing Limited or Francaise or any person who is a distributor or agent of either as a distributor or agent in any foreign country;

E. Acting as a distributor or agent of Limited or Francaise in any country;

F. Refusing to sell said products to any person at prices and on terms and condition of sale corresponding to those regularly offered to purchasers of the same classification for use or resale in defendant's territory, where a reason for such refusal is that such goods are for use or resale in the territory of Limited or Francaise.

X

Defendant is ordered and directed:

A. To cancel and terminate in all contracts and agreements with and invoices to customers and distributors such [fol. 691] provisions as restrict or prevent said customers or distributors from reselling said products in any foreign country;

B. To notify all its customers and distributors that

the defendant does not restrict or restrain the exportation or resale of said products manufactured or sold by the defendant in or to any foreign country;

C. To send a letter of notification to Limited and Francaise enclosing a copy of this Judgment and informing the aforesaid companies that they are no longer obligated not to import goods into any country included in the territory of the defendant, including the United States.

D. To file a report with the Clerk of this Court within three months from the date of this Judgment, showing action taken in compliance with the terms of this Paragraph X.

XI

Defendant is ordered and directed:

A. To designate and adopt a trade-mark in addition to the existing trade-marks, and within six months to commence to establish the same by manufacturing and selling said products so marked in the United States and for export to the territories of Limited and Francaise. Said additional mark shall be separate and distinctive from existing marks and shall not contain the name "Holophane" or be similar to or confusing with any mark registered, owned, controlled or used in any country by Limited or Francaise:

B. To take all necessary steps to register and secure the right to use such additional mark in all countries in which said products manufactured by Limited or Francaise are sold in substantial quantities;

C. To manufacture and to carry in stock sufficient quantities of said products marked with the additional mark to meet reasonably anticipated foreign demands. The provisions of this subsection may be met by obliterating the existing marks and substituting the additional mark in response to any orders destined for export to the territories of Limited and Francaise;

D. To offer said products for sale and export to the territories of Limited and Francaise at prices and upon terms [fol. 692] and conditions of sale non-discriminatory as compared to those offered to purchasers for use or resale in the United States.

E. To mark, package and advertise said products des-

tined for export to the territory of Limited or Francaise with such additional trade-mark and/or with a new company name so as to avoid any foreign rights of Limited or Francaise to the word "Holophane" alone or in combination with other words as a trade-name or trade-mark. In the event that this sub-section is satisfied by means of the creation of a new corporation, said corporation shall be maintained free of any control by Limited or Francaise, and shall be subject to the provisions of this Judgment.

F. To take the following steps to promote and develop export sales of prismatic glassware and illuminating appliances containing prismatic glassware marked with the additional mark:

(1) To circularize within one year from the date of this Judgment, known potential distributors of said products in the territory of Limited and Francaise, seeking to employ their services in selling and distributing said products under such additional mark;

(2) Beginning six months from the date of this Judgment and for a period of five years thereafter, to insert advertisements at reasonable intervals in trade journals of appropriate circulation in all countries in which said products manufactured by Limited or Francaise are sold in substantial quantities, of the manufacture and availability for sale of said products under said additional mark;

(3) To circularize within one year from the date of this Judgment all persons who from January 1, 1948, to date of this Judgment have made written inquiry to the defendant respecting the purchase or distribution of said products for export to any country in the territory of Limited or Francaise, informing them of the manufacture and availability for sale of said products under said additional mark, inviting inquiry as to their requirements, and soliciting their patronage.

[fol. 693] (4) To respond in writing to all persons who from the date of this Judgment make written inquiry to the defendant respecting the purchase or distribution of said products for export to the territory of Limited or Francaise, advising them of the manu-

facture and availability for sale of said products under said additional mark;

(5) For a period of three years from the date of this Judgment, to include in each of its advertisements for said products an appropriate notice to the effect that said products are available for sale in foreign countries under said additional mark.

G. To file a report with the Clerk of this Court each year for a period of five years from the date of this Judgment, showing action taken in compliance with the terms of this Paragraph XI.

XII

For the purpose of securing compliance with this Judgment and for no other purpose, duly authorized representatives of the Department of Justice, shall, upon written request of the Attorney General, or an Assistant Attorney General and on reasonable notice to the defendant, made to its principal office, be permitted, subject to any legally recognized privilege, (1) access during the office hours of said defendant to all books, ledgers, accounts, correspondence, memoranda, and other records and documents in the possession or under the control of said defendant relating to any matters contained in this Judgment, and (2) subject to the reasonable convenience of said defendant and without restraint or interference from it, to interview officers or employees of said defendant, who may have counsel present, regarding any such matters. No information obtained by the means provided in this Section shall be divulged by any representative of the Department of Justice to any person other than a duly authorized representative of such Department, except in the course of legal proceedings to which the United States is a party for the purpose of securing compliance with this Judgment or as otherwise required by law.

[fol. 694] XIII

Jurisdiction is retained for the purpose of enabling any of the parties to this Judgment to apply to this Court at any time for such further orders and directions as may be necessary or appropriate for the construction or carrying

out of this Judgment, for the modification or termination of any of the provisions thereof, and for the purpose of the enforcement of compliance therewith and the punishment of violations thereof.

Dated ——

—— ——, United States District Judge.

[fol. 695] In the United States District Court

[Title omitted]

Government's Proposed Findings of Fact and Conclusions of Law—December 1, 1952

These proposed findings of fact and conclusions of law are filed accompanying the Government's brief and proposed decree, pursuant to instructions of the Court.

(S.) Robert B. Hummel, Norman H. Seidler, Harry E. Pickering, Attorneys for the United States.

Dec. 1, 1952.

[fol. 696] In the United States District Court

[Title omitted]

Proposed Findings of Fact

1. This is an action by the United States to prevent and restrain the defendant from engaging in an unlawful combination and conspiracy, and being a party to unlawful contracts, in restraint of interstate and foreign trade and commerce in violation of Section 1 of the Sherman Anti-trust Act, 26 Stat. 209 (1890), 15 U.S.C. Section 1 (1940). The defendant, Holophane Company, Inc., transacts business and maintains a factory and is found within the Eastern Division of the Southern District of Ohio. (Complaint, par. 1, 2; not denied)

2. The defendant is a corporation organized and existing under the laws of the State of Delaware and maintaining offices in New York, New York and a factory in

Newark, Ohio. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware. (Complaint, par. 3; not denied)

3. Holophane Limited, hereinafter referred to as Limited, a joint stock company organized and existing under the laws of the United Kingdom with offices and principal place of business in London, England, is named as a co-conspirator. It is engaged in the sale of prismatic glassware and the manufacture and sale of illuminating appliances containing prismatic glassware. (Complaint, par. 4; not denied)

4. La Societe Anonyme Francaise Holophane, hereinafter referred to as Francaise, a corporation organized and existing under the laws of France, with offices and princi- [fol. 697] pal place of business in Paris, France, is named as a co-conspirator. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware. (Complaint, par. 5; not denied)

5. Prismatic glassware includes reflectors, refractors, lenses and lens plates, bearing configurations or prisms in the form of circles or lines or both, and is used to control the distribution and direction of artificial light. Prismatic glassware incorporated into illuminating appliances may be used to direct artificial light to a small area or to diffuse artificial light over a wide area. (Complaint, par. 6; not denied)

6. Illuminating appliances containing prismatic glassware are highly efficient and effective means of lighting factories, offices, schools, stores, hospitals, art galleries, radio broadcasting studios. Prismatic glassware is also used in transportation, marine, aviation, street and traffic lighting fixtures. (Complaint, par. 7; not denied)

7. In 1948, the year prior to the filing of the complaint in this action, the total gross sales by the defendant of prismatic glassware and prismatic glassware fixtures were $3,517,364.75, of which glassware sales amounted to $2,091,962.61 and fixture sales amounted to $1,425,402.14. (TR 85)

8. In 1925 there was in existence a patent license agreement by which Limited licensed to Francaise the right to

make and sell prismatic glassware under the existing and future patents of Limtied in Belgium, Spain, Portugal, Switzerland and Italy. (Ex. 7, p. 1) In addition to royalty provisions, the license agreement provided that (a) articles manufactured under the license would be marked with the name "Holophane" (Ex. 7, p. 2, cl. 4); (b) Francaise would not use inventions, designs, or the trade name "Holophane" except in accordance with the license (Ex. 7, p. 2, cl. 6); (c) the parties would mutually exchange discoveries and improvements (Ex. 7, p. 2, cl. 7); (d) Francaise would prevent exportation from the licensed countries to other areas (Ex. 7, p. 3, cl. 11); (e) Limited would prevent the [fol. 698] export into France or the licensed countries of Holophane goods. (Ex. 7, p. 3, cl. 12)

This license was executed in 1921, and was renewed with basically the same provisions in 1927, 1929, 1936 and 1940. (Ex. 7) The continuity of the license agreements was disrupted by the war, but a new license with similar terms was executed in 1947.

9. In 1925 Otis A. Mygatt held a controlling stock interest in both Limited and Francaise (TR 93) and Limited held all of the stock of the Holophane Glass Co. of New Jersey (Ex. 105, Item III, 11, not denied) There is no evidence that Mygatt participated in the management of any of the companies, but it does appear that each company was separately managed.

10. In 1925, a group of executives, engineers and employees of the aforementioned Holophane Glass Company, organized the predecessor company of the defendant, for the purpose of purchasing the Holophane Glass Company from Limited. (TR 93; Exs. 1; 105 and 106, Items III, 10) This group, which comprised the persons then actively engaged in the management of the Holophane Glass Company, was under the leadership of Charles Franck, then resident manager of the company and currently President of the defendant, and Joel B. Liberman, attorney for the company. (Ex. 105, Item III, 7, 8, 9) On June 6, 1925, Joel B. Liberman obtained from Limited an option to purchase the stock of Holophane Glass Company, which he assigned to the aforementioned predecessor company of the defendant. (Exs. 1; 2; 3) The purchase price was

$1,000,000, an amount less than the evaluated net worth of the company and no attempt was made to appraise the good will of the company. (Exs. 1; 2)

11. On September 15, 1925, the defendant and Limited entered into a trading agreement (Ex. 4) which was characterized by Joel B. Liberman as a reciprocal trade and patent agreement of great value. (Ex. 2, p. 1) It was signed on behalf of Limited by H. Hepworth Thompson as managing director, and for the defendant by Charles Franck as vice-president. It contained no termination date, and was in effect at the time of the trial.

[fol. 699] The essential features of the agreement are as follows:

(a) The territory of the defendant is defined as that part of the Continent of America north of the Panama Canal and adjacent islands (not including the West Indies), the Philippine Islands, the Republic of Cuba, and the Empire of Japan. (Ex. 4, cl. 6) The territory of Limited is defined as the whole of the world except the territory of the defendant and the Republic of France and its Colonies. (Ex. 4, cl. 6)

(b) Each party agrees to use every means in its power to prevent the exportation from its territory into the territory of the other, of products sold or manufactured by it, except with the consent in writing of that party. (Ex. 4, cl. 4)

(c) Each party agrees that it will not carry on trade in the territory of the other, except at the request and for the benefit of that party. (Ex. 4, clause not numbered in Exhibit, but being the paragraph on p. 4 beginning, "No company . . . .")

(d) Each party agrees that it will neither apply for nor obtain patent or trade mark protection in the territory of the other, except at the request and for the benefit of that party. (Ex. 4, clause not numbered in Exhibit, but being the paragraph on p. 4 beginning, "No company . . . .")

(e) Each party agrees to communicate and assign every invention, design, discovery or improvement and trade mark to the other, and render any aid necessary to enable the other to secure proper protection in its territory (Ex. 4, cl. 1)

(f) Each party agrees to supply to the other, when requested, Holophane products at a price equal to factory cost, plus 30%, delivered at place of manufacture. (Ex. 4, cl. 3)

(g) The agreement defines "Holophane products" as any product sold under the trade mark or trade name "Holophane" and/or manufactured or sold by either company. (Ex. 4, cl. 6)

[fol. 700] 12. On June 29, 1926, defendant and Francaise entered into a patent and manufacturing agreement which had been prepared by Joel B. Liberman. (Ex. 5) The agreement (Ex. 6) was made effective as of September 15, 1925; contains no termination date; and in all of its essential terms is identical to the trading agreement between defendant and Limited. (Ex. 6, compare with Ex. 4) The agreement defines the territory of Francaise as the Republic of France and its Colonies. (Ex. 6, cl. 6) It was signed on behalf of the defendant by Charles Franck as vice-president and on behalf of Francaise by Andre Froget as L'Administrateur-Delegue.

13. The record discloses no obligation upon the defendant to enter the agreement with Francaise. Francaise is not mentioned in the option to purchase the Holophane Glass Company, Inc. (Ex. 3) or the trading agreement between defendant and Limited (Ex. 4), although the latter agreement purports to set forth the subsidiaries of the parties. The name of Otis A. Mygatt does not appear on the agreements between the defendant and Limited and Francaise nor on the option to purchase the Holophane Glass Company, Inc.

14. The restraints imposed by the agreements apply to many countries of the world in which none of the companies have ever carried on business.

Although the agreements cover the entire world, (Ex. 4 and 6, cl. 6) the defendant admits that in 1925 there were many countries in the world in which neither the defendant, Limited nor Francaise carried on business (Ex. 105, Item III, 15; not denied); other countries in which they made only occasional or isolated sales (Ex. 105, Item III, 16; not denied); and that even to date there are a number of co-ntries in which none of the three companies had made

any substantial effort to develop a market. (Ex. 105, Item III, 17; not denied)

The agreements contain schedules listing those countries in which the parties had patent and trade name and mark protection in 1925 and 1926. The schedules reveal that there were many countries within the territories of [fol. 701] the defendant and Limited in which no patent or trade name or mark protection was listed. (Exs. 4 and 6)

15. The trading agreement between the defendant and Limited has been modified and elaborated upon in each of the following instances:

(a) In 1927 an understanding between the parties modified the trading agreement to the extent that Limited agreed to order 50% of its refractor requirements for South America from the defendant, and to pay a bonus to the defendant on the remaining 50%. It further provided for a free interchange of commercial and engineering information, including the right to visit and study the plants of each. (Ex. 8) After being renewed twice, this understanding was cancelled by Limited in 1933. (Ex. 10)

(b) In 1944 Limited sold to the defendant all of its rights to sell Holophane products in the South American territory (Exs. 11, p. 2, cl. 1; 13, p. 1) in exchange for $40,300 (Ex. 11, p. 3, cl. 2) and an agreement for the mutual exchange of all research, technical, manufacturing and commercial information. (Ex. 13, p. 1) The object of this transaction was to cement the relations between the two companies. (Ex. 13, p. 1, par. 3) On February 1, 1944, the parties entered into an agreement which extended the terms of the 1925 agreement to include South America in the territory of defendant. (Ex. 12, cl. 1) The parties also took this opportunity to reframe the definition of Holophane products to assure the application of the restraints to all products manufactured and sold by them, including products not subject to existing patents or trade marks, and products not marked "Holophane." (Exs. 13, p. 2; 14) Also in furtherance of their mutual interests, they agreed to a full and free exchange of all research, technical, manufacturing and commercial information. (Ex. 12, cl. 4)

The parties also agreed that in any future agreement with Francaise, Limited would insert a provision prevent-

ing Francaise from exporting into South American territory (Ex. 11, cl. 9), although at the time France was occupied by Germany, and the parties were uncertain as to the future organization of Francaise after the war. (Ex. [fol. 702] 14) In 1947, when Limited again granted a patent license to the re-established Francaise, this obligation was fulfilled by a provision in that license that neither Limited nor Francaise would permit the exportation of their products into the territory of the defendant. (Ex. 17, cl. 11)

(c) On June 11, 1945 defendant and Limited entered into an inter-company buying agreement, (Ex. 19) which elaborated upon that provision in the 1925 trading agreement (Ex. 4) which required the parties to supply each other with Holophane products. The new arrangements permitted a party to ship to and invoice directly, a customer located in the territory of the other but only at the request and for the benefit of the party owning the territory. It further permitted the selling company to render engineering service directly to the customer to assure the securing of the order. Accordingly, new formulae were devised for determining the profit due the party into whose territory the shipment was made in order to compensate the selling company for the clerical and engineering service rendered.

It was also agreed that, with regard to any direct inquiries or purchase orders received by either company from the territory of the other, such orders or inquiries would be referred to that company for instructions. (Ex. 19, p. 2)

16. The defendant and the co-conspirators, Limited and Francaise, have adhered to and enforced the agreements set forth in Findings 11, 12 and 15 herein. The defendant has performed those acts and has adopted those policies which it was obligated to do pursuant to the specified provisions of the agreements as set forth in Findings 11, 12 and 15 herein. (Government's Brief, III, F, 1)

17. In fulfillment of its obligations under the agreements with Limited and Francaise, the defendant has imposed upon its customers and dealers contractual obligations not to export products purchased from it into the territory of Limited and Francaise. (Exs. 37, 38, 39, 81) The defendant rejects orders and requests for quotations

[fol. 703] from its customers whenever it suspects that the order is to be shipped into the territory of either Francaise or Limited and refers such customers either to Francaise or Limited. (Government's Brief, III, F, 2) This practice of the defendant has substantially affected the foreign commerce of its customers. (Government's Brief, III, F, 2)

18. Although the defendant's answer alleges that the restrictive agreements were "reasonable and necessary for the protection of the business and good will sold," the defendant failed to establish any facts in support of this defense. (Government's Brief, IV, B, 2) Moreover, the defendant failed to establish that the agreements were subordinate to the alleged lawful purpose. (Government's Brief, IV, B, 2) The circumstantial proof and admissions of the parties establish that the restrictive agreements were designed to eliminate competition between the parties and with outsiders in all markets of the world and were neither measurable by, limited to nor subordinated to the reasonable necessities of the sale. (Government's Brief, IV, B, 3)

19. The restrictive arrangements between the defendant and the co-conspirators, Limited and Francaise, are in unreasonable restraint of the interstate and foreign commerce of the United States in prismatic glassware and appliances containing prismatic glassware.

20. The intended effects of the agreements between the defendant and the co-conspirators will continue unless prevented by this Court.

Dated: ——.

—— ——, United States District Judge.

———

[fol. 704] In the United States District Court

[Title omitted]

Proposed Conclusions of Law

1. The Court has jurisdiction of the subject matter hereof and of the defendant, and the complaint states a cause of action against the defendant under the provisions of the Act of July 2, 1890, entitled "an Act to protect

de and commerce against unlawful restraints and mo-
olies," as amended, commonly known as the Sherman
. 15 USC 1 et seq.

. Beginning in or about 1925 and continuing at all times
reafter to the date of these findings, the defendant and
co-conspirators have been continuously engaged in a
nbination and conspiracy in restraint of trade and com-
rce in prismatic glassware and illuminating appliances
taining prismatic glassware among the several states
the United States and with foreign nations and have
n and are now parties to contracts, agreements and
lerstandings in restraint of such trade and commerce;
in violation of Sect. 1 of the Sherman Act.

. Plaintiff is entitled to a decree.

Dated: ——.

—— ——, United States District Judge.

[fol. 705] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

DEFENDANT'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed January 22, 1953

The proposed Findings of Fact and Conclusions of Law submitted herein are filed with the proposed form of decree and brief submitted by defendant in accordance with the instructions of the Court.

For the convenience of the Court, the following table is presented showing those proposed findings of defendant which are the same or substantially the same as certain of the findings proposed by plaintiff and noting the indicia of differences:

Par. No. Defendant's Draft	Par. No. Plaintiff's Draft	Indicia of Differences
1	1	Underscoring
2	2	"
3	3	Identical
4	4	"
5	5	"
6	6	"
11	8	Identical after*
12	10	Underscoring
13	11	"
14	12	"
16	14	Identical
17	15	Identical
18	16	Identical save numbers
19	7	Identical
20	17	Identical save last sentence omitted

[fol. 706] Finally, conclusion of law Number 1 in defendant's draft is identical with conclusion of law Number 1 in plaintiff's draft.

—— ——, Attorneys for Holophane Company, Inc., Defendant.

Of Counsel:

Broad and Cassel, 420 Lincoln Road, Miami Beach 39, Florida.

Baker, Hostetler & Patterson, 1956 Union Commerce Building, Cleveland 14, Ohio.

January 19, 1953.

[fol. 707] IN THE UNITED STATES DISTRICT COURT

PROPOSED FINDINGS OF FACT

1. This is an action by the United States to prevent and restrain the defendant from engaging in an *alleged* unlawful combination and conspiracy, and being a party to unlawful contracts, in restraint of interstate and foreign trade and commerce in violation of Section 1 of the Sherman Antitrust Act, 26 Stat. 209 (1890), 15 U.S.C Section 1 (1940). The defendant, Holophane Company, Inc., transacts business and maintains a factory and is found within the Eastern Division of the Southern District of Ohio. (Underscoring is additional language to similar numbered paragraph of plaintiff's proposed findings of fact.)

2. The defendant is a corporation organized *in 1929* and existing under the laws of the State of Delaware and maintaining offices in New York, New York and a factory in Newark, Ohio. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware. (Underscoring is additional language to similar numbered paragraph of plaintiff's proposed findings of fact.)

3. Holophane Limited, hereinafter referred to as Limited, a joint stock company organized and existing under the laws of the United Kingdom with offices and principal [fol. 708] place of business in London, England, is named as a co-conspirator. It is engaged in the sale of prismatic glassware and the manufacture and sale of illuminating appliances containing prismatic glassware.

4. La Societe Anonyme Francaise Holophane, hereinafter referred to as Francaise, a corporation organized and existing under the laws of France, with offices and principal place of business in Paris, France, is named as a co-conspirator. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware.

5. Prismatic glassware includes reflectors, refractors, lenses and lens plates, bearing configurations or prisms in the form of circles or lines or both, and is used to control the distribution and direction of artificial light. Prismatic glassware incorporated into illuminating appliances may

be used to direct artificial light to a small area or
diffuse artificial light over a wide area.

6. Illuminating appliances containing prismatic gla
ware are highly efficient and effective means of lighti
factories, offices, schools, stores, hospitals, art galleri
radio broadcasting studios. Prismatic glassware is a
used in transportation, marine, aviation, street and tra
lighting fixtures.

7. Prismatic glassware as manufactured and emplo
by defendant, Limited and Francaise, had its origin ab
1892 when Professor Andre Blondel, a Frenchman,
veloped a new type of prismatic glass globe. After m
ing Professor Blondel, Otis A. Mygatt, an American,
came interested in the professor's discovery and form
Holophane Glass Company, Inc., a New Jersey corpo
tion, in 1898 to develop scientific lighting service and
manufacture and sell products embodying the new
velopments in prismatic glassware. In 1912 Mr. Myg
organized Limited to which he turned over all st
[fol. 709] of Holophane Glass Company, Inc., thus mak
it a wholly owned subsidiary of Limited. Later, whe
resident of France, Mr. Mygatt formed Francaise. (
92-93, Ex. 105, Item III, 1-2.)

8. Otis A. Mygatt held the controlling stock interest
both Limited and Francaise in 1925. Each company
separately managed. In addition, Charles Franck,
President of defendant, was Resident Manager of
American company from 1916 to 1925 and H. Hepwo
Thompson, its General Manager. Mr. Thompson
also General Manager of Limited. Otis A. Mygatt
chased at par and for cash all of the authorized 4
shares of preferred stock of Holophane Illuminating C
pany, Inc., when it was organized in 1925 for the purp
of acquiring Holophane Glass Company, Inc. On Octo
15, 1925, slightly more than a month after the first m
ing of the incorporators and subscribers to the cap
stock of the purchasing American company, said Otis
Mygatt, a stockholder therein, was unanimously elec
to its Board of Directors and later in the same mee
unanimously elected President. (Tr. 93-94, Ex. 1,
105, Item III, 10, Ex. 106, Item III, 10, Request I-Ex. A-

9. After its purchase from Limited, Holophane Glass Company, Inc., the New Jersey corporation, was merged into Holophane Illuminating Company, Inc., its purchaser, a New York corporation. The name of the latter was immediately changed to Holophane Glass Company, Inc., i.e. the name of the original American company. In 1926 the New York corporation again changed its name to Holophane Company, Inc. In 1929 Holophane Company, Inc., the New York corporation, was merged into defendant, a Delaware corporation of the same name. Preference shares of defendant were outstanding in September and [fol. 710] November, 1935. In November, 1935, defendant authorized an offer to purchase the shares of Otis A. Mygatt and his wife in Limited. The offer contemplated purchase of 75% of the outstanding British shares for a consideration to be contributed in equal third parts by defendant, Francaise and a British corporation. Payment involved a $100,000 cash outlay and a guaranteed sum to Mr. Mygatt of 1,000 pounds a year. (Ex. 105, III, 12, Ex. 1, Ex. 106, III, 14, Request I-Ex. A-17-18.)

10. There is no evidence to show whether Otis A. Mygatt or his heirs, if he be dead, retain the control of Limited and Francaise which he held at the time of the purchase of Holophane Glass Company, Inc., or whether his stock interest in the predecessor of defendant has been eliminated by sale, redemption or otherwise.

11. In 1921 Limited by patent license agreement granted to Francaise the right to make and the sole, full and exclusive license to sell prismatic glassware under the existing and future patents of Limited in Belgium, Spain, Portugal, Switzerland and Italy. The term of the agreement was five years from January 1, 1920, with option in Francaise to renew for a like term. (Ex. 7, pp. 1 & 4.) Francaise exercised its option. (Ex. 7, p. 5.)* In addition to royalty provisions, the license agreement provided that (a) articles manufactured under the license would be marked with the name "Holophane" (Ex. 7, p. 2, cl. 4); (b) Francaise would not use inventions, designs, or the trade name "Holophane" except in accordance with the license (Ex. 7, p. 2, cl. 6); (c) the parties would mutually exchange discoveries and improvements (Ex. 7, p. 2, cl. 7);

(d) Francaise would prevent exportation from the licensed countries to other areas (Ex. 7, p. 3, cl. 11); (e) Limited would prevent the export into France or the li-
[fol. 711] censed countries of Holophane goods. (Ex. 7, p. 3, cl. 12). (Asterisk signifies finding identical with second sentence of plaintiff's Number 8 from this point to end.)

This license, executed in 1921, was renewed with basically the same provisions in 1927, 1929, 1936 and 1940. (Ex. 7) The continuity of the license agreements was disrupted by the war, but a new license with similar terms was executed in 1947.

12. In 1925, a group of executives, engineers and employees of the aforementioned Holophane Glass Company, Inc., organized the predecessor company of the defendant, for the purpose of purchasing the Holophane Glass Company, Inc., from Limited. (Tr. 93, Exs. 1, 105 and 106, Items III, 10.) This group, which comprised the persons then actively engaged in the management of the Holophane Glass Company, Inc., was under the leadership of Charles Franck, then Resident Manager of the company and currently President of the defendant, and Joel B. Liberman, attorney for the company. (Ex. 105, Item III, 7, 8, 9.) On June 6, 1925, Joel B. Liberman obtained from Limited an option to purchase the stock of Holophane Glass Company, Inc., which he assigned to the aforementioned predecessor company of the defendant. (Exs. 1, 2, 3) *The purchase price was $1,000,000. The net worth of Holophane Glass Company, Inc., was $1,197,312, its land, buildings and equipment, but not good will, having been evaluated.* (Exs. 1-2) (Underscoring is in place of the last sentence in plaintiff's Number 10.)

13. On September 15, 1925, the defendant's *predecessor* and Limited entered into a trading agreement (Ex. 4) which was characterized by Joel B. Liberman as a reciprocal trade and patent agreement of great value. (Ex. 2, p. 1) It was signed on behalf of Limited by H. Hepworth Thompson as Managing Director, and for the de-
[fol. 712] fendant's *predecessor* by Charles Franck as Vice-President. It contained no termination date, and was in effect at the time of the trial.

The essential features of the agreement are as follows:

(a) The territory of the defendant's *predecessor* is defined as that part of the Continent of America north of the Panama Canal and adjacent islands (not including the West Indies), the Philippine Islands, the Republic of Cuba, and the Empire of Japan. (Ex. 4, cl. 6) The territory of Limited is defined as the whole of the world except the territory of the defendant's *predecessor* and the Republic of France and its Colonies. (Ex. 4, cl. 6)

(b) Each party agrees to use every means in its power to prevent the exportation from its territory into the territory of the other, of products sold or manufactured by it, except with the consent in writing of that party. (Ex. 4, cl. 4)

(c) Each party agrees that it will not carry on trade in the territory of the other, except at the request and for the benefit of that party. (Ex. 4, clause not numbered in Exhibit, but being the paragraph on p. 4 beginning, "No company . . .")

(d) Each party agrees that it will neither apply for nor obtain patent or trade mark protection in the territory of the other, except at the request and for the benefit of that party. (Ex. 4, clause not numbered in Exhibit, but being the paragraph on p. 4 beginning, "No company . . .")

(e) Each party agrees to communicate and assign every invention, design, discovery or improvement and trade mark to the other, and render any aid necessary to enable the other to secure proper protection in its territory. (Ex. 4, cl. 1)

[fol. 713] (f) Each party agrees to supply to the other, when requested, Holophane products at a price equal to factory cost, plus 30%, delivered at place of manufacture. (Ex. 4, cl. 3)

(g) The agreement defines "Holophane products" as any product sold under the trade mark or trade name "Holophane" and/or manufactured or sold by either company. (Ex. 4, cl. 6) (Underscoring is additional language to plaintiff's Number 11)

14. On June 29, 1926, defendant's *predecessor* and Francaise entered into a patent and manufacturing agreement which had been prepared by Joel B. Liberman. (Ex. 5) The agreement (Ex. 6) was made effective as of September 15, 1925; contains no termination date; and in all of its essential terms is identical to the trading agreement between defendant's *predecessor* and Limited. (Ex. 6, compare with Ex. 4) The agreement defines the territory of Francaise as the Republic of France and its Colonies. (Ex. 6, cl. 6) It was signed on behalf of the defendant's *predecessor* by Charles Franck as Vice-President and on behalf of Francaise by Andre Froget as L'Administrateur-Delegue. (Underscoring is additional language to plaintiff's Number 12)

15. Although the record discloses no explicit obligation upon defendant's predecessor to enter the agreement with Francaise, Limited was obligated to protect the territory of Francaise in 1925 at the time of the sale of Holophane Glass Company, Inc., the New Jersey corporation, to defendant's predecessor. (Ex. 7, p. 3, cl. 12)

When Joel Liberman, one of the founders of Holophane Illuminating Company, Inc., offered to sell said company the contract which he had negotiated in his own name with Limited to buy Holophane Glass Company, Inc., the New Jersey corporation, Mr. Liberman stated that he was able and did thereby offer similar advantages with [fol. 714] Francaise. The directors of Holophane Glass Company, Inc., a New York corporation, as the purchasing company, was immediately renamed, on October 15, 1945, ratified the agreement with Limited and authorized the execution of a similar agreement with Francaise. (Ex. 2, Request I-Ex. A-10)

16. The restraints imposed by the agreements apply to many countries of the world in which none of the companies have ever carried on business.

Although the agreements cover the entire world, (Ex. 4 and 6, cl. 6) the defendant admits that in 1925 there were many countries in the world in which neither the defendant, Limited nor Francaise carried on business (Ex. 105, Item III, 15; not denied); other countries in which they made only occasional or isolated sales (Ex. 105, Item III, 16;

not denied); and that even to date there are a number of countries in which none of the three companies had made any substantial effort to develop a market. (Ex. 105, Item III, 17; not denied)

The agreements contain schedules listing those countries in which the parties had patent and trade name and mark protection in 1925 and 1926. The schedules reveal that there were many countries within the territories of the defendant and Limited in which no patent or trade name or mark protection was listed. (Exs. 4 and 6)

17. The trading agreement between the defendant and Limited has been modified and elaborated upon in each of the following instances:

(a) In 1927 an understanding between the parties modified the trading agreement to the extent that Limited agreed to order 50% of its refractor requirements for South America from the defendant, and to pay a bonus to the defendant on the remain- [fol. 715] ing 50%. It is further provided for a free interchange of commercial and engineering information, including the right to visit and study the plants of each. (Ex. 8) After being renewed twice, this understanding was cancelled by Limited in 1933. (Ex. 10)

(b) In 1944 Limited sold to the defendant all of its rights to sell Holophane products in the South American territory (Exs. 11, p. 2, cl. 1; 13, p. 1) in exchange for $40,300 (Ex. 11, p. 3, cl. 2) and an agreement for the mutual exchange of all research, technical, manufacturing and commercial information. (Ex. 13, p 1) The object of this transaction was to cement the relations between the two companies. (Ex. 13, p. 1, par. 3) On February 1, 1944, the parties entered into an agreement which extended the terms of the 1925 agreement to include South America in the territory of defendant. (Ex. 12, cl. 1) The parties also took this opportunity to reframe the definition of Holophane products to assure the application of the restraints to all products manufactured and sold by them, including products not subject to existing patents or

trade marks, and products not marked "Holophane". (Exs. 13, p. 2; 14) Also in furtherance of their mutual interests, they agreed to a full and free exchange of all research, technical, manufacturing and commercial information. (Ex. 12, cl. 4)

The parties also agreed that in any future agreement with Francaise, Limited would insert a provision preventing Francaise from exporting into South American territory (Ex. 11, cl. 9), although at the time France was occupied by Germany, and the parties were uncertain as to the future organization of Francaise after the war. (Ex. 14) In 1947, when [fol. 716] Limited again granted a patent license to the reestablished Francaise, this obligation was fulfilled by a provision in that license that neither Limited nor Francaise would permit the exportation of their products into the territory of the defendant. (Ex. 17, cl. 11)

(c) On June 11, 1945 defendant and Limited entered into an inter-company buying agreement, (Ex. 19) which elaborated upon that provision in the 1925 trading agreement (Ex. 4) which required the parties to supply each other with Holophane products. The new arrangements permitted a party to ship to and invoice directly, a customer located in the territory of the other but only at the request and for the benefit of the party owning the territory. It further permitted the selling company to render engineering service directly to the customer to assure the securing of the order. Accordingly, new formulae were devised for determining the profit due the party into whose territory the shipment was made in order to compensate the selling company for the clerical and engineering service rendered.

It was also agreed that, with regard to any direct inquiries or purchase orders received by either company from the territory of the other, such orders or inquiries would be referred to that company for instructions. (Ex. 19, p. 2)

18. The defendant and the co-conspirators, Limited and Francaise, have adhered to and enforced the agreements

et forth in Findings 13, 14 and 17 herein. The defendant as performed those acts and has adopted those policies which it was obligated to do pursuant to the specified provisions of the agreements as set forth in Findings 13, 14 and 17 herein.

fol. 717] 19. In 1948, the year prior to the filing of the complaint in this action, the total gross sales by the defendant of prismatic glassware and prismatic glassware fixtures were $3,517,364.75, of which glassware sales amounted to $2,091,962.61 and fixture sales amounted to $1,425,402.14. (Tr. 85)

20. In fulfillment of its obligations under the agreements with Limited and Francaise, the defendant has imposed upon its customers and dealers contractual obligations not to export products purchased from it into the territory of Limited and Francaise. (Exs. 37, 38, 39, 81.) The defendant rejects orders and requests for quotations from its customers whenever it suspects that the order is to be shipped into the territory of either Francaise or Limited and refers such customers either to Francaise or Limited. (Identical with plaintiff's Number 17 save last sentence deleted.)

Proposed Conclusions of Law

1. The Court has jurisdiction of the subject matter hereof and of the defendant, and the complaint states a cause of action against the defendant under the provisions of the Act of July 2, 1890, entitled "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies", as amended, commonly known as the Sherman Act. (15 USC 1, et seq.)

2. The agreements existing between defendant and its predecessor on the one hand, and Limited and Francaise on the other were reasonable and necessary to restrain defendant's predecessor and later defendant from doing injury to Limited and its affiliate Francaise, which but for the bona fide sale of Holophane Glass Company, Inc., the New Jersey corporation, to defendant's predecessor neither defendant's predecessor nor defendant could have in-[fol. 718] flicted, and were within the protection of the doctrine of ancillary restraints when made and for some

time thereafter, the control of Limited and Francaise and the ownership of the entire issue of preference shares in the purchasing American company having resided in the same person.

3. Despite the lack of proof as to the present ownership of the Mygatt interests in defendant, Limited and Francaise, under the decision in *United States* v. *Timken Roller Bearing Company*, the agreements between defendant, Limited and Francaise now are unlawful and constitute a combination and conspiracy in restraint of trade and commerce in prismatic glassware and illuminating appliances containing prismatic glassware among the several states of the United States and with foreign nations, all in violation of Section 1 of the Sherman Act.

—— ——, United States District Judge.

Dated ——.

[fol. 719] In the United States District Court

[Title omitted]

Defendant's Proposed Form of Decree—
Filed January 22, 1953

Defendant respectfully submits the attached Proposed Form of Decree which is filed, together with its Brief and Proposed Findings of Fact and Conclusions of Law, pursuant to the instructions of the Court.

Shepard Broad, Lewis Horowitz, Richard F. Stevens, Attorneys for Holophane Company, Inc.

[fol. 720] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

PROPOSED FINAL JUDGMENT

Plaintiff, The United States of America, having filed its Complaint herein on November 10, 1949, and the defendant, Holophane Company, Inc., having filed its Answer to said Complaint on December 28, 1949, this cause came on for trial June 2, 1952, and the taking of evidence was concluded June 4, 1952. The Court filed Findings of Fact and Conclusions of Law herein, pursuant to Rule 52 of the Rules of Civil Procedure, on ——, ——.

Now, therefore, after hearing plaintiff and defendant, by their attorneys, it is hereby ordered, adjudged and decreed as follows:

I

This Court has jurisdiction of the subject matter hereof and of defendant, and the Complaint states a cause of action against defendant under Section 1 of the Act of Congress of July 2, 1890 (15 U.S.I. Par. 1), entitled "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies," as amended, commonly known as the Sherman Act.

II

As used in this judgment:

A. "Prismatic glassware" means glass products [fol. 721] generally in the form of lenses, refractors or reflectors, bearing configurations or prisms in the form of lines or circles or both, which are designed to control the distribution and direction of artificial light.

B. "Illuminating appliances containing prismatic glassware" means lighting fixtures employing prismatic glassware to control the distribution and direction of artificial light, commonly used in institutional, commercial and industrial structures and in street and traffic lighting.

C. "Defendant" means the Holophane Company, Inc., a corporation organized and existing under the

laws of the State of Delaware, and maintaining offices in New York, New York, and a factory in Newark, Ohio.

D. "Limited" means Holophane Limited, a joint stock company organized and existing under the laws of the United Kingdom, with offices and principal place of business in London, England.

E. "Francaise" means La Societe Anonyme Francaise Holophane, a corporation organized and existing under the laws of France, with offices and principal place of business in Paris, France.

F. "Person" means an individual, partnership, firm, association, corporation, or other business or legal entity, except Defendant.

G. "The Territory of the Defendant" means all of the continents of North America and South America and all of the islands adjacent to or in the vicinity of [fol. 722] said continents, including but not limited to the Republic of Cuba, the West Indies, Bahamas, all islands in the Caribbean Sea and the island of Bermuda, all territories and/or possessions of the United States of America, the Philippine Islands and the Empire of Japan as the same was constituted on September 15, 1925.

H. "The territory of Limited and Francaise" means all areas of the world other than those set forth above as the territory of the Defendant.

III

Reference in this Final Judgment to the Defendant shall include the defendant, its officers, directors, agents, employees, subsidiaries, successors, assign, who for the purposes of this Final Judgment shall be deemed to be one person, and all other persons acting under, through, or for the defendant. The provisions of this Final Judgment are applicable only to activities in or affecting foreign trade or commerce.

IV

Each of the following agreements is hereby declared and adjudged to be illegal and in violation of Section I of the Sherman Act, and is hereby declared to be cancelled; and

the Defendant is hereby enjoined and restrained from further performance or enforcement of any of the provisions of said agreements and any agrements amendatory thereof or supplemental thereto:

(a) Agreement dated September 15, 1925, between Holophane Limited and The Holophane Glass Company, Inc., and Holophane Illuminating Company, Inc., commonly referred to as the "Trading Agreement";

[fol. 723] (b) Agreement dated as of September 15, 1925, between Holophane Glass Company, Inc., and La Societe Anonyme Francaise Holophane, commonly referred to as the "Trading Agreement";

(c) Agreement dated February 1, 1944, between the defendant and Holophane, Limited, which modifies the "Trading Agreement" referred to in (a) above.

(d) Agreement dated June 11, 1945, between the Defendant and Holophane Limited entitled "Intercompany Buying Agreement."

V

Defendant is hereby enjoined and restrained from entering into, performing, enforcing, adopting, adhering to, maintaining or furthering, directly or indirectly, or claiming any rights under any contract, agreement, arrangement, understanding, plan or program for the purpose of or with the effect of continuing, reviving, or renewing any of the agreements listed in Section IV of this Judgment.

VI

Defendant is hereby enjoined and restrained from entering into, performing, adopting, adhering to, maintaining or furthering, directly or indirectly, or claiming any rights under any combination, conspiracy, contract, agreement, arrangement, understanding or concerted plan of action with "Limited" and "Francaise" or any subsidiary, successor, assign, agent, sales representative or distributor of said "Limited" and said "Francaise":

(a) To allocate or divide territories or markets for the production, sale or distribution of prismatic glass-

[fol. 724] ware or illuminating appliances containing prismatic glassware;

(b) To limit, restrain or prevent importation into or exportation from the United States of prismatic glassware or illuminating appliances containing prismatic glassware;

(c) To refrain from, restrain or limit production, sale or other distribution of prismatic glassware or illuminating appliances containing prismatic glassware, through quotas or otherwise, or to apportion customers for prismatic glassware or illuminating appliances containing prismatic glassware in any territory or market;

(d) To refrain from competing or to leave any person free from competition in the production, sale or other distribution of prismatic glassware or illuminating appliances containing prismatic glassware in any territory or market;

(e) To exclude any producer or distributor of prismatic glassware or illuminating appliances containing prismatic glassware from any territory or market, or to interfere with or restrict any such producer or distributor in competing in any territory or market;

(f) To fix, maintain or adhere to prices or price ranges, or other terms and conditions of sale or resale of prismatic glassware or illuminating appliances containing prismatic glassware produced by defendant for sale or other distribution in any territory or market, or produced by any other person for sale or other distribution in the United States.

[fol. 725] (g) To receive, grant, disclose, render available or exchange, in such a way as to deny any third person access thereto, any assignment, license or grant of immunity under a patent or patent application, relating to prismatic glassware or illuminating appliances containing prismatic glassware;

(h) To receive, grant, disclose, render available or exchange, in such a way as to deny any third person access thereto, (1) information, advice, assistance or rights with respect to any invention, discovery, improvement, practice, formula, pattern, device, process,

method, or other technical information, relating to the production of prismatic glassware or illuminating appliances containing prismatic glassware, or (2) any material or machinery used in the production of prismatic glassware or illuminating appliances containing prismatic glassware, or any information, advice, assistance or rights with respect to any such material or machinery.

VII

Defendant is hereby enjoined from refusing to sell prismatic glassware or illuminating appliances containing prismatic glassware to any person or discriminating as to availability and prices, terms, and conditions of sale of such prismatic glassware or illuminating appliances containing prismatic glassware, where the reason for such refusal, discrimination, or failure is that such prismatic glassware, or illuminating appliances containing prismatic glassware, are for use, resale, or other distribution, either in their original form or incorporated in another product, in some country or area other than defendant's territory as herein defined.

[fol. 726] VIII

Defendant is hereby ordered and directed within ninety days from the date of this judgment, to provide copies thereof to "Limited" and "Francaise"; and to all directors, officers, subsidiaries, agents, sales representatives and distributors of Defendant.

IX

For the purpose of securing compliance with this judgment and for no other purpose, duly authorized representatives of the Department of Justice shall, upon written request of the Attorney General, or an Assistant Attorney General, and on reasonable notice to the Defendant, made to its principal office, be permitted, subject to any legally recognized privilege, (1) access during the office hours of said defendant to all books, ledgers, accounts, correspondence, memoranda, and other records and documents in the possession or under the control of said defendant relating to any matters contained in this judgment, and (2) subject

to the reasonable convenience of said defendant and without restraint or interference from it, to interview officers or employees of said defendant, who may have counsel present, regarding any such matters. No information obtained by the means provided in this Section shall be divulged by any representative of the Department of Justice to any person other than a duly authorized representative of such Department, except in the course of legal proceedings to which the United States is a party for the purpose of securing compliance with this judgment or as otherwise required by law.

X

Jurisdiction is retained for the purpose of enabling any of the parties to this judgment to apply to this Court at any time for such further orders and directions as may be necessary or appropriate for the construction or carrying out of this judgment, for the modification or termination of any of the provisions thereof, and for the purpose of the enforcement of compliance therewith and the punishment of violations thereof.

—— ——, United States District Judge.

Dated ——.

[fol. 727] In the United States District Court

[Title omitted]

Government's Second Proposed Findings of Fact—Filed February 5, 1953

These proposed findings of fact are filed accompanying the Government's Reply Brief.

(S.) Robert B. Hummel, Norman H. Seidler, Harry E. Pickering, Attorneys for the United States.

Feb. 4, 1953.

[fol. 728] IN THE UNITED STATES DISTRICT COURT

FINDINGS OF FACT

1. This is an action by the United States to prevent and restrain the defendant from engaging in an unlawful combination and conspiracy, and being a party to unlawful contracts in restraint of interstate and foreign trade and commerce in violation of Section 1 of the Sherman Anti-trust Act, 26 Stat. 209 (1890), 15 U.S.C. Section 1 (1940). The defendant, Holophane Company, Inc., transacts business and maintains a factory and is found within the Eastern Division of the Southern District of Ohio. (Complaint, par. 1, 2; not denied)

2. The defendant is a corporation organized in 1929 and existing under the laws of the State of Delaware and maintaining offices in New York, New York and a factory in Newark, Ohio. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware. (Complaint, par. 3, not denied)

3. Hol-phane Limited, hereinafter referred to as Limited, a joint stock company organized and existing under the laws of the United Kingdom with offices and principal place of business in London, England, is named as a co-conspirator. It is engaged in the sale of prismatic glassware and the manufacture and sale of illuminating appliances containing prismatic glassware. (Complaint, par. 4; not denied)

4. La Societe Anonyme Francaise Holophane, hereinafter referred to as Francaise, a corporation organized and existing under the laws of France, with offices and princi-
[fol. 729] pal place of business in Paris, France, is named as a co-conspirator. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware. (Complaint, par. 5; not denied)

5. Prismatic glassware includes reflectors, refractors, lenses and lens plates, bearing configurations or prisms in the form of circles or lines or both, and is used to control the distribution and direction of artificial light. Prismatic glassware incorporated into illuminating appliances may be used to direct artificial light to a small area or to diffuse

artificial light over a wide area. (Complaint, par. 6; not denied)

6. Illuminating appliances containing prismatic glassware are highly efficient and effective means of lighting factories, offices, schools, stores, hospitals, art galleries, radio broadcasting studios. Prismatic glassware is also used in transportation, marine, aviation, street and traffic lighting fixtures. (Complaint, par. 7; not denied)

7. In 1948, the year prior to the filing of the complaint in this action, the total gross sales by the defendant of prismatic glassware and prismatic glassware fixtures were $3,517,364.75, of which glassware sales amounted to $2,091,962.61 and fixture sales amounted to $1,425,402.14. (TR 85)

8. In 1921 Limited by patent license agreement granted to Francaise the right to make and the sole, full and exclusive license to sell prismatic glassware under the existing and future patents of Limited in Belgium, Spain, Portugal, Switzerland and Italy. The term of the agreement was five years from January 1, 1920, with option in Francaise to renew for a like term. (Ex. 7, pp. 1 & 4) Francaise exercised its option. (Ex. 7, p. 5) In addition to royalty provisions, the license agreement provided that (a) articles manufactured under the license would be marked with the name "Holophane" (Ex. 7, p. 2, cl. 4); (b) Francaise would not use inventions, designs, or the trade name "Holophane" except in accordance with the license (Ex. 7, p. 2, cl. 6); (c) the parties would mutually exchange discoveries and improvements (Ex. 7, p. 2, cl. 7); (d) Francaise would prevent exportation from the licensed countries to other [fol. 730] areas (Ex. 7, p. 3, cl. 11); (e) Limited would prevent the export into France or the licensed countries of Holophane goods. (Ex. 7, p. 3, cl. 12)

This license, executed in 1921, was renewed with basically the same provisions in 1927, 1929, 1936 and 1940. (Ex. 7) The continuity of the license agreements was disrupted by the war, but a new license with similar terms was executed in 1947.

9. Otis A. Mygatt held the controlling stock interest in both Limited and Francaise in 1925. (TR 93) Limited held all of the stock of the Holophane Glass Co., Inc. (Ex. 105, Item III, not denied) Each company was separately

managed. In addition, Charles Franck, now President of defendant, was Resident Manager of the American company from 1916 to 1925 and H. Hepworth Thompson, its General Manager. Mr. Thompson was also General Manager of Limited. There is no evidence that Mygatt participated in the management of any of the companies.

10. In 1925, a group of executives, engineers and employees of the aforementioned Holophane Glass Company, Inc., organized the predecessor company of the defendant, for the purpose of purchasing the Holophane Glass Company, Inc., from Limited. (Tr. 93, Exs. 1 and 105, 106, Items III, 10) This group, which comprised the persons then actively engaged in the management of the Holophane Glass Company, Inc., was under the leadership of Charles Franck, then Resident Manager of the company and currently President of the defendant, and Joel B. Liberman, attorney for the company. (Ex. 105, Item III, 7, 8, 9.) On June 6, 1925, Joel B. Liberman obtained from Limited an option to purchase the stock of Holophane Glass Company, Inc., which he assigned to the aforementioned predecessor company of the defendant. (Exs. 1, 2, 3) The purchase price was $1,000,000. The net worth of Holophane Glass Company, Inc. was $1,197,312, for its land, buildings and equipment, the good will not having been evaluated. (Exs. 1, 2)

11. After its purchase from Limited, Holophane Glass Company, Inc., the New Jersey corporation, was merged into Holophane Illuminating Company, Inc., its purchaser, a New York corporation. The name of the latter was immediately changed to Holophane Glass Company, Inc., i.e. the name of the original American company. In 1926 the New York corporation again changed its name to Holo- [fol. 731] phane Company, Inc. In 1929 Holophane Company, Inc., the New York corporation, was merged into defendant, a Delaware corporation of the same name. (Defendant's Proposed Finding of Fact No. 9)

12. On September 15, 1925, the defendant's predecessor and Limited entered into a trading agreement (Ex. 4) which was characterized by Joel B. Liberman as a reciprocal trade and patent agreement of great value. (Ex. 2, p. 1) It was signed on behalf of Limited by H. Hepworth Thompson as Managing Director, and for the defendant's prede-

cessor by Charles Franck as Vice-President. It contained no termination date, and was in effect at the time of the trial.

The essential features of the agreement are as follows:

(a) The territory of the defendant's predecessor is defined as that part of the Continent of America north of the Panama Canal and adjacent islands (not including the West Indies), the Philippine Islands, the Republic of Cuba, and the Empire of Japan. (Ex. 4, cl. 6) The territory of Limited is defined as the whole of the world except the territory of the defendant's predecessor and the Republic of France and its Colonies. (Ex. 4, cl. 6)

(b) Each party agrees to use every means in its power to prevent the exportation from its territory into the territory of the other, of products sold or manufactured by it, except with the consent in writing of that party. (Ex. 4, cl. 4)

(c) Each party agrees that it will not carry on trade in the territory of the other, except at the request and for the benefit of that party. (Ex. 4, clause not numbered in Exhibit, but being the paragraph on p. 4 beginning, "No company . . .")

(d) Each party agrees that it will neither apply for nor obtain patent or trade mark protection in the territory of the other, except at the request and for the benefit of that party. (Ex. 4, clause not numbered in Exhibit, but being the paragraph of p. 4 beginning, "No company . . .")

[fol. 732] (e) Each party agrees to communicate and assign every invention, design, discovery or improvement and trade mark to the other, and render any aid necessary to enable the other to secure proper protection in its territory. (Ex. 4, cl. 1)

(f) Each party agrees to supply to the other, when requested, Holophane products at a price equal to factory cost, plus 30%, delivered at place of manufacture. (Ex. 4, cl. 3)

(g) The agreement defines "Holophane products" as any product sold under the trade mark or trade name "Holophane" and/or manufactured or sold by either company. (Ex. 4, cl. 6)

13. On June 29, 1926, defendant's predecessor and Francaise entered into a patent and manufacturing agreement which had been prepared by Joel B. Liberman. (Ex. 5) The agreement (Ex. 6) was made effective as of September 15, 1925; contains no termination date; and in all of its essential terms is identical to the trading agreement between defendant's predecessor and Limited. (Ex. 6, compare with Ex. 4) The agreement defines the territory of Francaise as the Republic of France and its Colonies. (Ex. 6, cl. 6) It was signed on behalf of the defendant's predecessor by Charles Franck as Vice-President and on behalf of Francaise by Andre Froget as L'Administrateur-Delegue.

14. The record discloses no obligation upon the defendant to enter the agreement with Francaise. Francaise is not mentioned in the option to purchase the Holophane Glass Company, Inc. (Ex. 3) or the trading agreement between defendant and Limited (Ex. 4), although the latter agreement purports to set forth the subsidiaries of the parties. The name of Otis A. Mygatt does not appear on the agreements between the defendant and Limited and Francaise nor on the option to purchase the Holophane Glass Company, Inc.

When Joel Liberman, one of the founders of Holophane Illuminating Company, Inc., offered to sell said company the contract which he had negotiated in his own name with Limited to buy Holophane Glass Company, Inc., the New Jersey corporation, Mr. Liberman stated that he was able and did thereby offer similar advantages with Francaise. (Ex. 2)

[fol. 733] 15. The restraints imposed by the agreements apply to many countries of the world in which none of the companies have ever carried on business.

Although the agreements cover the entire world, (Ex. 4 and 6, cl. 6) the defendant admits that in 1925 there were many countries in the world in which neither the defendant, Limited nor Francaise carried on business (Ex. 105, Item III, 15; not denied); other countries in which they made only occasional or isolated sales (Ex. 105, Item III, 16; not denied); and that even to date there are a number of countries in which none of the three companies had made any

substantial effort to develop a market. (Ex. 105, Item III, 17; not denied)

The agreements contain schedules listing those countries in which the parties had patent and trade name and mark protection in 1925 and 1926. The schedules reveal that there were many countries within the territories of the defendant and Limited in which no patent or trade name or mark protection was listed. (Exs. 4 and 6)

16. The trading agreement between the defendant and Limited has been modified and elaborated upon in each of the following instances:

(a) In 1927 an understanding between the parties modified the trading agreement to the extent that Limited agreed to order 50% of its refractor requirements for South America from the defendant, and to pay a bonus to the defendant on the remaining 50%. It further provided for a free interchange of commercial and engineering information, including the right to visit and study the plants of each. (Ex. 8) After being renewed twice, this understanding was cancelled by Limited in 1933. (Ex. 10)

(b) In 1944 Limited sold to the defendant all of its rights to sell Holophane products in the South American territory (Exs. 11, p. 2, cl. 1; 13, p. 1) in exchange for $40,300 (Ex. 11, p. 3, cl. 2) and an agreement for the mutual exchange of all research, technical, manufacturing and commercial information. (Ex. 13, p. 1) The object of this transaction was to cement the relations between the two companies. (Ex. 13, p. 1, par. 3) On February 1, 1944, the parties entered into an agreement which extended the terms of the 1925 agreement to include South America in the [fol. 734] territory of defendant. (Ex. 12, cl. 1) The parties also took this opportunity to reframe the definition of Holophane products to assure the application of the restraints to all products manufactured and sold by them, including products not subject to existing patents or trade marks, and products not marked "Holophane." (Exs. 13, p. 2; 14) Also in furtherance of their mutual interests, they agreed to a full and free exchange of all research, technical, manufacturing and commercial information. (Ex. 12, cl. 4)

The parties also agreed that in any future agreement

with Francaise, Limited would insert a provision preventing Francaise from exporting into South American territory (Ex. 11, cl. 9), although at the time France was occupied by Germany, and the parties were uncertain as to the future organization of Francaise after the war. (Ex. 14) In 1947, when Limited again granted a patent license to the re-established Francaise, this obligation was fulfilled by a provision in that license that neither Limited nor Francaise would permit the exportation of their products into the territory of the defendant. (Ex. 17, cl. 11)

(c) On June 11, 1945 defendant and Limited entered into an inter-company buying agreement, (Ex. 19) which elaborated upon that provision in the 1925 trading agreement (Ex. 4) which required the parties to supply each other with Holophane products. The new arrangements permitted a party to ship to and invoice directly, a customer located in the territory of the other but only at the request and for the benefit of the party owning the territory. It further permitted the selling company to render engineering service directly to the customer to assure the securing of the order. Accordingly, new formulae were devised for determining the profit due the party into whose territory the shipment was made in order to compensate the selling company for the clerical and engineering service rendered.

It was also agreed that, with regard to any direct inquiries or purchase orders received by either company from the territory of the other, such orders or inquiries would be referred to that company for instructions. (Ex. 19, p. 2)

[fol. 735] 17. The defendant and the co-conspirators, Limited and Francaise, have adhered to and enforced the agreements set forth in Findings 12, 13 and 16 herein. The defendant has performed those acts and has adopted those policies which it was obligated to do pursuant to the specified provisions of the agreements as set forth in Findings 12, 13 and 16 herein. (Government's Brief, III, F, 1)

18. In fulfillment of its obligation under the agreements with Limited and Francaise, the defendant has imposed upon its customers and dealers contractual obligations not to export products purchased from it into the territory of

Limited and Francaise. (Exs. 37, 38, 39, 81) The defendant rejects orders and requests for quotations from its customers whenever it suspects that the order is to be shipped into the territory of either Francaise or Limited and refers such customers either to Francaise or Limited. (Government's Brief, III, F, 2) This practice of the defendant has substantially affected the foreign commerce of its customers. (Government's Brief, III, F, 2)

19. Although the defendant's answer alleges that the restrictive agreements were "reasonable and necessary for the protection of the business and good will sold," the defendant failed to establish any facts in support of this defense. (Government's Brief, IV, B, 2) Moreover, the defendant failed to establish that the agreements were subordinate to the alleged lawful purpose. (Government's Brief, IV, B, 2) The circumstantial proof and admissions of the parties establish that the restrictive agreements were designed to eliminate competition between the parties and with outsiders in all markets of the world, and were neither measurable by, limited to nor subordinated to the reasonable necessities of the sale. (Government's Brief, IV, B, 3)

[fols. 736-737] 20. The restrictive arrangements between the defendant and the co-conspirators, Limited and Francaise, are in unreasonable restraint of the interstate and foreign commerce of the United States in prismatic glassware and appliances containing prismatic glassware.

21. The intended effects of the agreements between the defendant and the co-conspirators will continue unless prevented by this Court.

Dated: ——.

—— ——, United States District Judge.

[fol. 738] IN UNITED STATES DISTRICT COURT

[Title omitted]

HEARING—May 8, 1953

Before The Honorable Mell G. Underwood.

APPEARANCES:

Robert B. Hummel and Norman H. Seidler, on behalf of the Government.

Shepard Broad, Broad & Cassel, Miami Beach, Florida, and Richard F. Stevens, Baker, Hostetler & Patterson, Cleveland, Ohio, on behalf of the Defendant.

[fol. 739] Friday Morning Session, May 8, 1953

COLLOQUY BETWEEN COURT AND COUNSEL

The Court: The Court will now return to 2659, United States of America vs. Holophane Company, Inc.

The Court would appreciate being advised as to the status at this particular time. I think on December 2, 1952 the Government filed proposed findings of fact and conclusions of law, together with a proposed decree and brief in support thereof. Now, on January 22, 1953—if I am not correct you may correct me—defendant filed its proposed findings of fact and conclusions of law, together with proposed decree and brief in support thereof.

Now, I understand the defendant admits the illegality of the agreements in question and its proposed decree so states and enjoins the defendant from further performance or enforcement of any provisions of the agreements, and contains a mandate to effectuate the finding that the agreements are illegal.

You might give me a better analysis of this than the Court has. But, on February 5, 1953 the Government filed a second proposed findings of fact embodying thirteen of [fol. 740] the defendant's proposed findings of fact. The Government objects to seven of the proposed findings of fact of the defendant and to the omission of five of the Government's proposed findings of fact. And, is it not true that you agree on one proposed conclusion of law and disagree on one?

Mr. Stevens: Your Honor, my name is Stevens. I am speaking on behalf of Holophane. I think your summation is correct. I do not recall the date specifically, nor could I say as definitely as the Court has as to the number of points in agreement and disagreement. Certainly it is a fact that each side has filed the papers which you stated, that a second set of proposed findings of fact was submitted by the Government in which they very largely agreed with the proposed findings which had been submitted by counsel for the defendant.

The Court: Going a step further—I am trying to find out what we have to hear today—is not the hearing today on the proposed findings of fact and the conclusions of law and proposed decrees?

Mr. Stevens: That's correct.

Mr. Seidler: If Your Honor please, on the basis of the papers that are filed and before this Court by the defendant and by the Government, there seems to be only [fol. 741] one issue being raised at this time. The defendant has many findings which are identical to the Government's.

The Court: Now, before you go into the argument, can we agree as to the issue? One is that whether the Court can consider exhibits attached to the plaintiff's request for admissions and admitted to be genuine but not introduced in evidence. Is that one of the issues?

Mr. Stevens: That's one of them.

Mr. Seidler: If Your Honor please, I think that is an issue.

The Court: I am going to state them and you gentlemen tell me if I am correct. Now, the scope of relief to be granted. I understand the Government stands firm in its position that not only must the decree enjoin the illegal conduct but it must act affirmatively in curing the evils that are alleged to have arisen as a result of the violations. Does not the defendant contend that the specific relief requested in this respect goes too far?

Mr. Stevens: That certainly is correct.

The Court: That was just a brief summarization of it. You gentlemen may take it from there on. But, [fol. 742] can you agree as to what is the purpose of this hearing this morning?

Mr. Broad: I should like to simply say——

The Court: State your version of it.

Mr. Broad: My version of it is simply this. Feeling as strongly as we do that the agreements were essentially legal to begin with and perhaps are still legal, we can't affort the luxury of carrying on this expensive litigation which will put us out of business anyway. So, we said to the Court and to the Government, "very well, we will concede the agreements are illegal. We will concede to the cancellation. We will concede never again directly or indirectly to be involved in any such agreement, but please leave us alone." The Government isn't content with that. It wants this little business out of Newark, Ohio to become a world-wide business. We haven't the capital, we haven't the manpower, we haven't the know-how to spread ourselves all over the world, and yet, if we are to comply with the decree that the Government submitted to Your Honor, we have one of these two desperate choices: either to immediately cease doing business, or to go broke within a year or two, and we say that that's an imposition far beyond our means.

The Court: Now, will you state clearly, briefly and con- [fol. 743] cisely wherein you are in idsagreement?

Mr. Broad: Yes, sir. The Government wants us to adopt a trademark other than Holophane so as to circumvent the French and English Holophane Companies, and to go into business in the territories where the French and English Holophane Companies do business. We cannot accept it. That, substantially, is the big difference. The rest is largely language. We are a small little company.

The Court: Now, do you gentlemen agree that that is the principal difference?

Mr. Hummel: If Your Honor please, if that is the principal difference, it is the first time that that principal difference has been raised. We are now hearing an argument that the defendant cannot afford to do these things. There isn't a single word in any of the prior proceedings in this case that this would put the defendant out of business or would be such a severe economic burden on the defendant. This is the first time we are hearing this argument.

The Court: I am not so much concerned with that part of the argument as I am in learning specifically wherein you are in disagreement.

Mr. Hummel: We thought we knew where we were in disagreement, but this is the first time this disagreement has been raised. We thought the issues had to do [fol. 744] with the power of this Court or whether the Court should exercise its discretion to enter an affirmative order against the defendant requiring it to do certain things. Now, as to going into business, we have not asked that the defendant engage in a world-wide business. We have asked that they take certain minimum steps to explore the possibilities. They are not forced to go into business.

The Court: I understand their principal objection is to the propriety of the Court in requiring the acts requested, as they are fundamental and far-reaching.

Mr. Stevens: That's correct, Your Honor. Our position, Your Honor, is that——

The Court: Is that, then, your only difference: the ability and propriety of this Court going that far? Is that your principal difference?

Mr. Stevens: That is our principal difference. That certainly is. We say that in the form of a decree we have submitted to Your Honor that we have acknowledged the illegality of these contracts for the purpose of this litigation. We have provided an abrogation of those contracts.

The Court: Now, I think we will probably make time if I will let you proceed in order. You take up your [fol. 745] side of the equation and present it as clearly as you can, and opposing counsel will be afforded the same opportunity. I will allocate thirty minutes to the United States and thirty minutes to the Holophane Company to present their side of the argument.

Mr. Seidler: If Your Honor please, we think now it is clear that the only substantial issue before this Court is the nature of the decree. The defendant admits that the Government is entitled to a decree.

The Court: I think before we proceed with the argument we will take a recess.

(Recess.)

The Court: You may proceed with your argument. I trust counsel will confine your argument to what you consider to be the specific question or questions before the Court.

ARGUMENT OF MR. SEIDLER

Mr. Seidler: If Your Honor please, the statement which was prepared by the defendant setting forth the propositions and authorities to be presented in oral argument present the two points which are not fully covered in the briefs and which the Government feels are essential that they be discussed in oral argument. One point was that the decree in the Timken case meets all the requirements for the full protection of the public interest in this [fol. 746] case. The next point was that the Court should not enter an order requiring affirmative actions abroad which may be enjoined by a foreign tribunal.

Now, the proposition that defense counsel has just presented that the Holophane Company would be driven out of business by the provisions of our paragraph 11 in our proposed decree is something entirely new. It is not contained in the briefs. This is the first time we hear of it.

There is a fundamental conflict between the parties in respect to the process of drafting a decree. Now, what the defendant is doing is offering to the Court a package deal. It has picked up a decree in another case, in the Timken case, and offers a part of this decree to this Court as a proper remedy in this action. On the other hand, the Government offers a decree which is designed to enjoin, first, the continuation of the conspiracy as evidenced in this case by the record, and secondly, to pry open avenues of competition which have been long closed by the respective actions of the parties.

The Government's decree was carefully adapted to meet the requirements of the specific needs which are evidenced in the record of this case, and our brief reviews each paragraph of the decree as it applies to the past actions of the parties. The defendant has raised no objections to [fol. 747] our decree from paragraphs 1 to 10. It challenges only paragraph 11 of the Government's decree, and in its place it offers a part of a decree in another case.

Now, we would like to point out the difficulty in following the defendant's procedure, for it sets up almost an impossible task. Rather than studying the proposals which the Government has made, which are designed to fit this particular case, this case in which the Court has the whole record before it, the defendant would set us to the task of first comparing the proposed decree with that of the Timken decree to see what is left out of the Timken decree in this decree. Then, we would have to compare additional provisions which are in this proposed decree and which are not in the Timken decree, for the simple reason that this is a different case from the Timken case and we have asked for different provisions than those of the Timken decree. Now, determining why they are different involves a process of comparing the Timken decree with the Timken record, because in the Timken case the Court did not write a decision on the decree and the record in the Timken case is not before this Court.

Now, at a later point we will show the kind of question that is involved in this process, but at this point we just want to show that it is a very indirect way of deciding what is necessary to this case, for the ultimate [fol. 748] determination, the ultimate test of what is an appropriate decree in this case must be the record in this case. The Timken decree was not drafted as a model for use in other cases. It was designed for that case. And, similarly, the decree in this case is not offered for use in another case, but simply for the record in this case. We feel it is a fundamental mistake to seek to fashion a decree in this case after a decree that was entered in another case.

Now, let us turn to paragraph 11 of the Government's decree. This is the paragraph to which the defendant raises a specific objection. In the first place, the defendant is required to adopt a trademark which will be separate and distinctive from any existing mark which it now has or which the co-conspirators have, shall not contain the name Holophane or a similar or confusing mark. The defendant is required to register and secure the right to use these marks in such countries where the co-conspirators, Francaise or Limited, sell their products in substantial quantites.

Next, the defendant is required to carry in stock such adequate quantities of these products containing the new mark as might be necessary to meet reasonable demands, and the provisions of this section can be complied with by the simple process of obliterating the mark that exists on the defendant's product.

Next, the defendant is required to offer products either [fol. 749] so marked or not marked, as the case may be, at prices and terms which are not discriminatory as compared with prices and terms of the defendant's products as sold in the United States.

Next, to adopt a name with which to sell the newly marketed products abroad in such a manner as to avoid an infringement of the trade name and trade mark rights of Limited and Francaise, and finally, to take the necessary steps to publicize the fact that the defendant is now ready to sell in markets where it previously had refrained from selling, and is ready to fill orders under a mark or under no mark, at any rate in such a way as to prevent its infringing upon Francaise and Limited.

Now, the object of these provisions is simple. The defendant will be obliged to explore the possibilities of competing with Limited and Francaise in what were previously exclusive trade areas, on the basis of either a new name or a new mark or on the basis of no mark. In other words, in such a way that it will not infringe with the rights of Limited and Francaise. In other words, to prod the defendant into exploring what possibilities there are for foreign trade, for after all, for twenty-seven years the defendant has ignored such possibilities, has refrained from exploring such possibilities.

Now we hear for the first time that this is going to [fol. 750] drive the defendant out of business, and we just don't see it. There is no showing to that effect. There is nothing in these provisions that requires any tremendous expenditure of money on the part of the defendant. It is not required to build another factory. It is not even required to go into a new business. It is simply required to sell such products or to explore or to offer for sale or to attempt to sell such products as it has in stock, but with a mark

or without a mark, to sell in such a way that the existing trade mark barriers will not prevent competition.

I fail to see any way in which the defendant is going to go out of business by this manner. An expenditure for advertising is a simple one. I assume the defendant advertises in the trade journals. It will now advertise in trade journals abroad, the simple requirement of notifying past seekers of products, orders that it has received and referred to the other companies, inquiries that it has received and referred to the other companies. It is merely required to write those companies and tell them that they now can come to the Holophane Company and seek to purchase products. It merely is an opportunity for the customers in the United States, of the defendant, to purchase products from the defendant, incorporate them in their finished products and ship them abroad, something they have been prevented from doing to date.

[fol. 751] Now, it is our belief that this provision of the decree is in keeping with the judicially expressed intention that decrees in anti-trust cases shall deal with future economic conditions of the enterprise as well as with the past violations, and the purpose of such affirmative provisions is clearly set forth in the International Salt case, 332 U.S., page 400, that "In an equity suit, the end to be served is not punishment of past transgression nor is it merely to end specific illegal practices. A public interest served by such civil suits is that they effectively pry open to competition a market that has been closed by defendant's illegal restraints. If this decree accomplishes less than that, the Government has won a lawsuit and lost a cause."

That is our position, Your Honor, that what the defendant is telling this Court to do is to enter a decree which will in effect do nothing. They are telling this Court, "Cancel the agreements, they are illegal, but don't do anything that will make us violate these agreements."

The Court: Your position is that from this point forward they should walk alone in world business, is that it?

Mr. Seidler: They should explore the possibilities of foreign trade where they haven't in the past.

[fol. 752] The Court: Would that affirmative action on the part of the Court be disastrous to their business? I

assume that there is some value attached to the name of Holophane, is there not?

Mr. Seidler: There is a great value, I believe, to the name Holophane in America.

The Court: They would be starting from scratch in world business, then, so to speak?

Mr. Seidler: Not entirely, Your Honor.

The Court: I am not saying they should or should not. I am merely inquiring.

You are going to follow them and make the reformation complete, is that it?

Mr. Seidler: Let me say this. Let me first show one way in which they will not lose the value of their name.

The Court: I don't want to interfere with your argument. Had you finished?

Mr. Seidler: No, I had not.

The Court: Go ahead.

Mr. Seidler: Just one point on your question, Your Honor. The name Holophane will not be lost entirely to the defendant. It is clear in the record that there are many American companies which come to the American Holophane Company, purchase the Holophane prod-[fol. 753] ucts, incorporate it in a new product of their own and seek to export it. Up to now they have not been able to do that. This provision would make available to such customers the Holophane product without a conflicting name so they could include that in their product and ship it abroad. In this way the Holophane name would be preserved in this country.

As for abroad, the restrictions that the parties have imposed upon one another has assured that the American Holophane Company will never build up a good will in the foreign countries, because the American Holophane Company has refrained from applying for trade mark protection in the territories of the other countries. They have refrained from seeking patent protection in those countries. They have referred all orders and inquiries destined for those territories to the companies controlling those territories.

The Court: Admitting what you say to be true, for the purpose of the question, would they not be definitely handi-

capped in business in those countries by the loss of the name, or, what would be their position insofar as securing trade marks and patents?

Mr. Seidler: Insofar as being handicapped by the loss of the name, I don't think they are truly losing a name in those countries because they have never had it. I want to emphasize we are not asking you to waive a magic [fol. 754] wand and create foreign trade. We are hoping that with these provisions there will be an exploration of foreign trade. If under these conditions foreign trade does not come into being, we can at least say it is not because there has been a conspiracy between the parties but because the defendant simply isn't able to do business abroad.

The Court: The specific relief which you are arguing at this time would be far reaching, would it not?

Mr. Seidler: No, I don't think so. We point to other cases in which precisely these provisions have been included; that is, not precisely these provisions but provisions designed to prod the defendant to take some steps to explore the possibility of competition. For example, Your Honor, the United States v. Imperial Chemical Industries case, Judge Ryan, included a proviison in the final decree which required duPont to promote in the world markets the sale of its products. And, similarly, in the Timken case, Timken was required to advertise in foreign journals that their products were now available for sale. They also were required to write to those customers whom they previously had rejected because of the restrictions and notify them that the product was available for sale, and in that case that consisted of a considerable publication because there were many inquiries.

[fol. 755] The Court: That is your fundamental difference in this case, is it not, as to whether or not the proposed action which you are asking this Court to take is proper, and whether it is too far reaching?

Mr. Seidler: If You Honor please, I don't think the defendant is telling you that these actions are not proper.

The Court: I am trying to find out for my own benefit, for the benefit of the Court. Isn't that the sole and only question in this case?

Mr. Seidler: I think the sole question, the sole object——

The Court: Isn't the sole question whether the affirmative action which you are asking the Court to take is proper or whether it is too far reaching?

Mr. Seidler: I don't think the defendant says it is not proper.

The Court: I am merely asking you a question. Isn't that your point of disagreement?

Mr. Seidler: Our point of disagreement is definitely the affirmative provision.

The Court: Isn't the sole and only question confronting the Court as to the propriety of the action [fol. 756] which you are asking the Court to grant; that is, the affirmative action?

Mr. Seidler: The affirmative action, except I don't think it is a question of propriety. The defendant merely raises the point that if you require it to compete, it may be subject to a lawsuit in foreign countries.

The Court: Whether or not the use of the proper term is propriety may be another question, but they are certainly challenging the ability and the propriety of this Court in taking such action.

Mr. Seidler: They haven't challenged the ability. They admit that you can require the defendant to take these actions.

The Court: What do you say, gentlemen?

Mr. Stevens: We certainly do challenge the propriety of the Court and we think that is the precise word to use. We use it both as a matter of law and as a matter of fact in this case.

The Court: Isn't that the sole and only question for the Court to determine?

Mr. Seidler: The sole and only question for this Court to determine is whether it should take some affirmative action to attempt to bring about competition.

The Court: You say some affirmative action, but the [fol. 757] affirmative action which you contemplate by this decree——

Mr. Seidler: It is the only affirmative action which the Government has been able to find which will relieve the

restrictions that have occurred for twenty-seven years. After all, what the defendant is saying to you is that, "Cancel the agreements not to compete but don't make us compete, because if you make us compete we are going to violate our agreements not to compete. We are going to violate valuable rights in our co-conspirators, Francaise and Limited." Valuable rights in what? Valuable rights in the agreements not to compete, which is illegal, which the defendant admits is illegal. And, this whole point that they take, Your Honor, is that "Cancel the agreements, but we are not going to compete. We can't compete because of the agreements. Cancel, but we are going to adhere to the agreements. We are not going to compete."

The Court: In other words, you want the Court to affirmatively take such action to cure all these evils of the past?

Mr. Seidler: Precisely, Your Honor.

The Court: That is the only question for the Court, isn't it?

Mr. Seidler: And, I might mention, Your Honor, that our brief points out at considerable length how these [fol. 758] evils have become entrenched and how they create barriers to any possibility of trade between these companies unless they are forced to compete, that merely cancelling the agreements leaves the barriers there, leaves the barriers where they have been created.

The Court: Are you going to add anything additional in your oral argument to what you have already said?

Mr. Seidler: Yes, Your Honor. We would like to consider the proposition raised in the defendant's points or statements that it intends to raise. They quote an abstract that is taken from the case comment in the Harvard Law Review, British Nylon Spinners, Ltd., v. Imperial Chemical Industries, Ltd. We feel that this abstract is really not adequate for the purposes of this discussion because we feel we can bring in additional facts about this case which will indicate to Your Honor that we are not going to be content to sit back and permit this Court to do a vain thing, which is what the defendant is claiming. You see, the defendant speculates that if Your Honor includes

these provisions, the defendant may be sued abroad by a foreign tribunal, in a foreign tribunal, by one of the co-conspirators. This is purely speculation because I would like to point out that Your Honor's decree would offer a choice to the co-conspirators. Conceivably they would choose to compete with the defendant, because finding the [fol. 759] defendant coming into their territories they might find that this is a good opportunity for them to go into the United States market, and not bring a lawsuit, which is the only speculation that the defendant makes.

I believe that is probably what the defendant is most afraid of, because once this active hostility, perhaps, by the defendant, in selling abroad comes to the attention of Francaise and Limited, they may welcome the opportunity to break down this close collaboration that has existed and take advantage of the opportunity to compete in the American market. And that, after all, is the philosophy of the Sherman Act, that competition will determine the businesses of the parties, not private agreement.

But, turning to this British Nylon Spinners case, this problem arose out of a decree which was entered by Judge Ryan in the Imperial Chemical Industries case, and as a part of this decree Judge Ryan required ICI to assign to duPont patents which duPont had assigned to ICI and which ICI in turn had exclusively licensed to British Nylon Spinners. We want to emphasize that the conflict arose out of a requirement of reassigning patents, that no issue has been raised on that provision of the ICI decree which required dePont to establish a foreign business. This provision is set forth on page 74 of our brief.

But, the point is that the foreign controversy came up [fol. 760] in regard to a vested right in a patent and not to the enforcement of the agreement to compete. But, more important, the decision which is cited by the defendant is based upon a temporary restraining order designed to maintain the status quo until the case can be heard fully on the merits, and the record in the temporary restraining order consisted solely of an uncontroverted affidavit by the plaintiff and a copy of the United States judgment. Secondly, Judge Ryan did not avoid this is-

sue. He did not avoid the point. It was actually raised by counsel for ICI during the case. They pointed out that complications might arise in Great Britain because of the Judge's decree, and Judge Ryan's attitude was he could not forego his judicial obligation to remove barriers from the foreign trade of the United States merely on the basis of representations of defense counsel, and it is clear that these matters are not fully settled in the courts of the world because the policies of the United States should not be subordinated to the feelings of defense counsel that possibly a foreign court will decide contrary to the policy of the United States, or that it will decide contrary to the powers of this Court.

Now, we would like to point out that the matter is not settled in the ICI case. On October 27, 1952, at a hearing before Judge Ryan, ICI informed the Court of the temporary injunction issued in England. Judge Ryan ad- [fol. 761] vised counsel for ICI that in the interest of justice they should be sure to supply the British court with all the evidence upon which he based his decision. ICI agreed to do this. But, further, Judge Ryan suggested that the Attorney General of the United States explore the possibility of taking steps to inform the British court of the position of the United States Government at the trial on the merits.

Now, if Your Honor please, it seems to us that this issue is of paramount importance to the whole public policy of the Sherman Act, certainly insofar as it relates to international trade. The defendant is saying to this court that although you have jurisdiction over the defendant, although you have jurisdiction over the subject matter, you cannot enforce the laws of the United States against it simply because of the speculation that the foreign co-conspirators may sue on the contract. And, it has not been unusual in anti-trust cases for a court to look at the contract rights of the parties where only one of the parties is before it and nevertheless vindicate the public interest in the Sherman Act by striking the contract without reference to the rights of the third parties, the other parties to the contract who are not before the court.

In effect, the defendant is saying, "The Sherman Act

will be invalid insofar as it applies to restraints upon foreign commerce of the United States so long as the defend- [fol. 762] ant has as a co-conspirator a foreign company which may sue it in a foreign court which may seek to upset the decision of this court." Now, that is a bridge to be crossed when we come to it. This Court cannot refrain from rendering a decree that will be effective simply on the speculation that it may be overturned or be subject to attack in a foreign court.

I would like to just conclude by saying that the defendant has not presented any arguments to derogate from the necessity of this relief. They haven't presented any facts or any law to derogate from Your Honor's authority to take this necessary action. We cannot be confident that this decree of this Court will be fully respected in the courts of all other nations, but we do believe that this Court should not give up its traditional equity power over the actions of its own citizens, no matter where those actions occur, to give up the policy of free competition in international trade simply out of the fear that a foreign court may frustrate the effectuation of that policy.

Thank you.

ARGUMENT OF MR. STEVENS

Mr. Stevens: If the Court please, I think some consideration, very briefly, of the history of the Holophane Company would be helpful, because it provides a backdrop against which consideration may be given adequately to the points that Mr. Seidler has raised. The record in this case—and [fol. 763] I approach this argument having not participated in the prior presentation to Your Honor, but merely having studied the documents and the written record—the record in this case shows explicitly that in the year 1892 Otis A. Mygatt, an American, met a French Professor Blondel. Professor Blondel had ingeniously devised a method of impressing upon glass prismatic contours which could be used to diffuse light. This impressed Mr. Mygatt with commercial possibilities. He returned to this country and in 1898 formed Holophane Glass Company of New Jersey. Later he form Holophane Limited, a British corporation, and transferred all of the stock of Holophane Glass Company, the New Jersey corporation, to Holophane

Limited. Still later he became a citizen or, rather, a resident of France and formed Holophane Francaise, and he controlled not only French Holophane, British Holophane, but also American Holophane, and inasmuch as American Holophane had a Canadian subsidiary, he controlled that also.

So, we start at sometime prior to 1925 with Otis A. Mygatt actually controlling all of these companies. Now, it came to be in 1925 that the management of the American Company wished to purchase the American assets and to acquire the American properties. They did so, Your Honor, Mr. Mygatt at that time still controlling Francaise, still controlling Limited. And, the record in this case, including [fol. 764] in the term "record" the documents which are filed in the office of the clerk of this court for request for admission as to genuineness by the Government, shows that Mr. Mygatt had to purchase the preference shares of the American company, that he became a director and president of the American company.

Now, I point out sketchily that background to show that American Holophane, the predecessor of the defendant in this case, was born legitimately, so to speak, that it entered this enterprise in 1925 at a time when Mr. Mygatt had control of the total Holophane enterprise, and naturally Mr. Mygatt wouldn't want his American company competing with this British company. He wouldn't want his French company competing with his British company. And, so, there were agreements between those companies. An individual could certainly operate world wide and tell his manager in Great Britain and his manager in the United States not to compete with each other. Certainly, if a corporation could qualify to do business world wide, a single corporation, there would be no question but what it could do likewise today, I dare say, and it hasn't yet been decided categorically that an American corporation operating through a 100 per cent owned subsidiary can't do the same thing today.

But, back in 1925 American company could not have bought the Holophane interests in this country if they had not made the kind of ancillary agreements which protected [fol. 765] British Holophane from competition by American Holophane, and which by the same token protected

American Holophane from competition with British Holophane. France is tied in. Although it seems mysterious to the gentlemen for the Government, France is tied in to this picture, Your Honor, because British Holophane had an agreement with French Holophane that they would not compete interse. Therefore, it was incumbent upon the seller of American Holophane, which was British Holophane, to see to it that American Holophane likewise did not compete with French.

And, so, we say that under the doctrine of ancillary restraints, which is adequately documented in the memoranda submitted to the Court, that we were born legitimate, and whether or not in the passage of time that has become an illegal transaction, this defendant has come into this Court and said frankly and said likewise to Government counsel, "We are a small company, we have a net worth of less than a million and a half. We can't afford extended litigation. We are willing to have these contracts cancelled if that will terminate this expensive and costly litigation."

This isn't a matter of idle theory or speculation or philosophical contemplation as to the scope and range of the Sherman Anti-Trust Act. This is a practical matter to a small company, which, Your Honor, does not sell a physical item. It sells a service. And, I was very im- [fol. 766] pressed to see the clarity with which the sales manager of this company, when examined by Government counsel, expressed that. At page 29 of the record Mr. Keller stated, "Our products are made as a service to our engineering organization, which is the principal business of our company. The products that we make are to serve our customers and to satisfy the engineering requirements of our district and field and headquarters engineers, and are primarily prismatic glass and fixtures that utilize prismatic glass parts."

And, so, this company, which is being asked by the Government to go into the costly process of exploring markets abroad, is a company which doesn't sell a physical product but sells an engineering service, and in order to explore those markets abroad under the transcript of the testimony in this case, Your Honor, it would be necessary for Holophane to go abroad with either a new trademark

or no trademark and an expensive highly trained engineering staff. We say to Your Honor that we should not have that burden thrust upon us, that we have come to this Court in candor and stated that these agreements should be cancelled, and while it may be that in the form of the decree which we have submitted we have not categorically provided affirmative action to be taken, we have absolutely safeguarded the rights of the public against further intrusion by Holophane into the realm of forbidden conduct under those contracts.

[fol. 767] We say to Your Honor that viewing the British Nylon Spinners case as an authority which can be a guide post, Your Honor should not exercise the power which the Court has over an individual defendant to require it to go abroad to engage in costly, probably unnecessary, and certainly not proven to be necessary, trade or efforts to gain trade. And, it isn't an idle speculation as to what we will be faced with. British Holophane has been interested in this litigation. They have learned about it and they have corresponded with Mr. Broad about it. I would like the privilege of reading not only a letter which was dated December 16, 1952, but a cablegram confirmed by letter dated April 30, 1953.

Mr. Hummel: If Your Honor please, is it proper to read letters that have been received in the course of the last few months? We haven't seen the letters. We don't know whether we want to object to them. I just question the propriety, whether they have any bearing on the case, the question of the authenticity or any other problems involved.

The Court: He may read them. This is argument. If the Court thinks they are not proper and should not be considered, they will not be given consideration.

Mr. Hummel: I simply want to save the Government's [fol. 768] rights. I enter my objection at this point.

The Court: You may read it, and the Court will reserve a ruling on the objection.

Mr. Stevens: "Dear Mr. Broad: re United States of America v. The Holophane Company, Inc.

"I have to acknowledge your letter of the 25th November with the copies of the proposed decrees in this action.

"I have read the proposed decrees carefully and each

successive reading re-inforces more strongly the impression which I formed on the first reading, namely, that both decrees are much more severe than anything I had expected.

"As you know, the Agreements entered into in 1925 by the predecessors of the Holophane Co., Inc., with my Company and Holophane France were in accordance with accepted commercial practice, and were, and still are, quite lawful over here. I find it difficult to understand why after a lapse of over twenty-five years the Agreements are considered by the United States Government to have become illegal. The terms of the Agreements are entirely reasonable, and they do not, and could not, prevent competition in America or elsewhere from any rival manufacturer of prismatic glassware—

The Court: Who writes this letter?

Mr. Stevens: This is written, Your Honor by the Chair-[fol. 769] man of the Board of Holophane Limited.

The Court: He is arguing about something that is water over the dam.

Mr. Stevens: I am submitting it to show their point of view.

The Court: If it has any point of view on the specific question before the Court you may proceed. Up to this point—

Mr. Stevens: I agree that thus far it is introductory.

The Court: Up to this point it has no bearing whatever in the opinion of the Court. The Court is not concerned with what he thinks about it. The Court is concerned with the course of action which it must take or should take and whether or not it is proper.

Mr. Stevens: Perhaps we can leave that letter and return to this cable.

The Court: You may read the letter. If the Court is of the opinion it has any bearing upon the question to be determined, it will consider it.

Mr. Stevens: This is the cablegram. I will read that. This is by the Solicitor for Holophane Limited, and it is dated—

Mr. Hummel: If Your Honor please, I just want to [fol. 770] save our objection to this procedure on the

ground of hearsay, incompetency, irrelevancy and immateriality.

The Court: The Court has already told counsel as to that.

Mr. Stevens: "As solicitors for Holophane Limited we refer to civil action No. 2659 in your District Court, United States of America versus Holophane Company, Inc. We understand District Court may make mandatory order directing defendant to do business in contravention agreements with our clients which are governed by English law. If your clients take steps in our clients territory in breach of agreements, our clients acting on advice received will take all possible steps in courts concerned to restrain. We direct attention to case British Nylon Spinners versus Imperial Chemical Industries in which English High Court of Appeal declined to accept that American decree absolved Imperial Chemical Industries from performance of obligations under English contract."

The Court: In other words, they are saying in effect that no matter what this Court does these agreements are still legal?

Mr. Stevens: They are saying that under English law they are legal. I am citing that not to show what we think this Court should do, but to show merely their point of view, and to show how far we have gone in telling this [fol. 771] Court what we are willing to submit to in the form of decree we have provided.

The Court: Their point of view, if the Court got it properly, is that these proceedings ought not to be taking place over here.

Mr. Stevens: Their point of view is—

The Court: What bearing does their point of view have on the future of your company?

Mr. Stevens: It merely is this, that if this small company is required to take the kind of affirmative steps which the Government is asking, that letter, if I had completed reading it, and the cablegram, would indicate that we would be not only faced with the expense of trying to merchandise abroad, and I think probably futile expense, because we would be operating without trade mark protection, but also we would be required to face substantial legal costs in the courts of Great Britain.

The Court: In other words, they are telling you in effect that your contracts are still in full force and effect in England?

Mr. Stevens: That's right.

The Court: You may leave the letters for the Court to examine. Counsel have made an objection to the Court considering them, and if they are not proper to be con-
[fol. 772] sidered, their objection will be sustained. If they are, the Court will examine them.

Mr. Stevens: Now, on that background I think some discussion of the British Nylon Spinners case may be helpful, to show you the strength of that decision, and I can appreciate why the Government wishes to minimize it. The facts in that case, Your Honor, show that British Nylon Spinners is a company in which an actual defendant in the litigation in this country owns a 50 per cent interest. In other words, ICI, as it is called, Imperial Chemical Industries, owns 50 per cent of British Nylon Spinners. Furthermore, Judge Ryan found that the reason there was a British Nylon Spinners was because duPont and Imperial Chemicals wished to whip the devil around the post and to put a corporate barrier between the British patent rights on nylon so that they could not be reached by a decree in this country. There is nothing of that kind in our case, but I submit to you that when the British Court in a set of facts such as that determines that it is not bound by the decree entered in this country and that as a matter of comity it need not invalidate the very important British property rights which were involved in the contract British Nylon Spinners had with the ICI and the assignment of the patents incident thereto, that it is an impressive authority against exercise of the power of the Court acting in personam to directions abroad.

[fol. 773] Now, if Your Honor will look at the decree which we have submitted, I think we can demonstrate that we have in good faith undertaken to provide all that the Government should ask. In paragraph VI of our decree there are certain provisions which seem to me to go a long way. For example, at the top of page 6 we are enjoined from entering into any agreement with Limited or Francaise or any individual or subsidiary or company

associated with them; to receive, grant, disclose, render available or exchange, in such a way as to deny any third person access thereto, any assignment, license or grant of immunity under a patent.

The Court: What would your British friends say to that?

Mr. Stevens: Our British friends aren't going to like it, but we are saying we are willing to do that. What we don't want this Court to do and what the Government is asking Your Honor to make us do, is oblige us to go abroad, so that when the battle on that clause is fought it will be fought on British soil and not on American soil. The Government is trying to force this defendant, although it says it doesn't wish to penalize us, the Government is trying to force this defendant to fight that legal battle in another country. We say that we are willing to fight that battle when, as and if it arises, but we want to fight it on home territory. That is what it amounts to, Your [fol. 774] Honor, in so many words.

By the same sort of provision, the next sub-paragraph of that clause, we say that we are willing to give on a non-exclusive basis our know-how and our machinery. There, again, our British friends and our French friends aren't going to like it. I haven't troubled Your Honor with the typically Gallic letters we have had from French counsel on the subject, but I can assure you that they are much more explosive than the British ones. But, we say to Your Honor that we should be permitted to fight the battle which will come, when, as and if it comes incident to the cancellation of those contracts, in American courts and in a climate which will be appreciative of our rights and the operation, scope and function of the laws which the gentlemen on my right are here to uphold.

We say that under the form of contract, or rather decree, which we have submitted, we are required, Your Honor, to sell to any of our distributors who themselves wish to sell abroad. The evidence in this case, Your Honor, showed in one particular incident that there were efforts by a company known as Line Material Company to purchase American Holophane products to sell in the bent-o-lux countries, and that that effort eventually

bogged down because of positions taken by French Holophane. Under this decree we would be obliged to sell to Line Material and to any other distributor who wants [fol. 775] to put our products abroad. But, under the decree that distributor would then have to determine whether he wanted to face litigation abroad. We say that Holophane Company, Inc., the defendant in this case, should be permitted to defend its position under whatever decree comes to pass in this case in the courts of the United States, and for that reason we say that despite the absence in so many words of directions for affirmative relief, as the gentlemen from the Government say, we have submitted to Your Honor a very wide reaching form of decree, one which would have full possibilities of bringing about all of the correction which they want, one which means that from this day forward, if that decree were entered today, Holophane Company, Inc. could no longer transmit on an exclusive basis to French and British Holophane knowledge of the patents, knowledge of its know-how, knowledge of its machinery, particularly adapted. We say to Your Honor that under that set of facts this small company, with a net worth of less than a million and a half, should not be forced to undergo the harrassing, expensive if not stultifying experience of trying to sell abroad without a trade mark in the face of entrenched interests, and then being required, abroad, to meet the impact of litigation.

May I speak one more thought. Mr. Broad, although we have the references in our memoranda, suggested I might mention the Timken case. Now, it is true that the form of [fol. 776] decree which we have submitted, as we stated, is adapted from the Timken case. In the Imperial Chemicals case Judge Ryan, thinking that du Pont and Imperial Chemicals had sat down with a new product and literally divided the world, referred to the language of Mr. Justice Jackson in the Timken case, when Jackson said, in throwing out the very severe penalty of divestiture which the Government sought to impose, that Timken didn't sit down after all with its competitors and divide the world. But, Timken did, Your Honor, purchase an interest in

foreign companies, so that it became virtually a partner with foreign manufacturers in companies and thereby restricted competition between those jointly owned companies and Timken.

That's a step far beyond anything you have in the facts of this case. Here, as I have stated, flowing naturally, and we submit logically, even inevitably as ancillary to a normal transaction—and there is a Sixth Circuit decision which we cite which shows that even in an anti-trust case the Sixth Circuit Court of Appeals has recognized the doctrine of ancillary restraints—we say that in our case, flowing naturally from that situation where the doctrine of ancillary restraints apply, we come down to today to a point where this defendant is willing to say to this Court that these contracts may be cancelled and be determined illegal.

We are not beyond the Timken case. We are well [fol. 777] within it, and for that reason we have used the decree which emerged from an intensely litigated matter such as the Timken case as a model for the relief which should be here granted and as the very outside limitation, and our decree, we feel, adapts the operative measures in the Timken decree to the facts of this case as skillfully as it can be done.

ARGUMENT OF MR. SEIDLER

Mr. Seidler: There are just two points I wanted to make which I probably overlooked in our opening argument, Your Honor. The first is that this provision 11, we wish to emphasize, does not affect the Holophane trade mark in this country or where Holophane has been doing business in the past. It still retains that name Holophane, and in fact, the defendants are not prevented from bringing an action against the French or English Company if it sought to invade the United States market on the basis of a Holophane mark or name.

One point about paragraph 11 that I probably overlooked. The defendant claims that paragraph 11 would oblige it to violate the patent rights of Limited and Francaise as well as the trade mark rights. Now, it is obvious that the paragraph would not oblige it to violate the trade mark rights of the foreign countries because that is pre-

cisely what we sought to avoid. We don't want them to use the barrier of trade marks to prevent competition. The point as to patents can be covered by the insertion of a [fol. 778] clause to the effect that "nothing in this paragraph shall require the defendant to ship abroad in violation of any valid patent rights of either Limited or Francaise."

The defendant makes much of the Timken decree in its argument. Now, there is one point we would like to make, and it indicates how you just can't apply the Timken decree to this case. The Timken decree does not require Timken to adopt a new mark to ship abroad. It merely required them to advertise and say that the product is available. Now, in examining the voluminous record of the Timken case you find one exhibit, Exhibit 149, and on the basis of that exhibit you find that Timken did in fact have a mark under which it was manufacturing which did not violate the marks of the foreign co-conspirators, and so that provision, the provision we propose now, wasn't necessary in the Timken case, whereas in this case it is.

Now, I would like to only make one point about this argument of ancillary restraints and culpability. We came fully prepared to argue all of the points that were raised by Mr. Stevens in his argument. We felt, though, on the basis of the understanding we had reached prior to argument, that there was only one substantial issue of the decree, so we did not address ourselves to the proposition of the ancillary restraint, the proposition of the defendant, in fact, speaking to this Court citing certain documents that [fol. 779] are not on this record and which are not before this Court. Our brief fully sets forth our position in all these respects, particularly on the point that the ancillary restraint doctrine is not factually supported and is not legally adequate in this case. But, the whole point that the defendant makes in bringing up these questions is the question of culpability. How guilty was it? Was it this guilty or that guilty? Was it legal at its inception or wasn't it? We feel that's not in issue because the defendant admits the agreements are unlawful, they admit they should be cancelled, and the purpose of a decree is not punishment but remedy, remedy applied to the facts and the basis of the record before the Court.

The Court: I think you are pretty much in agreement that that is the only question confronting the Court, the question of remedy. The Court is not being led astray by any argument to the contrary.

Mr. Seidler: Our brief fully documents our position.

The Court: I think you gentlemen stated your position clearly and concisely at the opening of this argument, but the question involved is the extent of the remedy in this case. Isn't that true?

Mr. Stevens: That's right.

[fol. 780] The Court: It still is true, just as true now as it was at ten o'clock this morning.

Mr. Seidler: And, in regard to the extent of the remedy I would like to point out that the defendant raised the point of paragraph 6 of their proposed decree showing how much they were willing to do.

The Court: Before we leave the question, did I understand a moment ago that you were advocating some change in the proposed findings which you submitted as to patents?

Mr. Seidler: In the proposed decree.

The Court: Would you write that out and submit a copy to opposing counsel and also to the Court. Now, if you have anything additional in the way of supplementing the record you have already made, you may have ten days in which to file it. Otherwise, the case will be considered as finally submitted and closed as far as arguments or memoranda are concerned.

Mr. Seidler: When you speak of supplementing the record, you speak of briefs?

The Court: If there is anything further which you think would be helpful to the Court.

Mr. Seidler: I just want to raise the point that the defendant has made an effort to bring in findings of [fol. 781] fact based on documents that were not admitted in evidence in this case, and we have taken a strong position against that procedure.

The Court: If you have covered those questions fully in your memoranda there is no necessity of supplemental memoranda. If you have not, the Court will grant you ten days in which to file a supplemental memorandum.

There will be no answer memorandum. You will just file your version with the Court. Do you want to file anything additional?

Mr. Seidler: We will submit to this Court the provision that we have suggested as addition to paragraph 11 so that the defendant will not be required to infringe upon valid patent rights of Francaise and Limited.

The Court: That is the only additional thing you desire to submit?

Mr. Seidler: That is the only thing additional.

The Court: How about counsel for the defendant?

Mr. Broad: May I be heard just a few minutes?

The Court: You came all the way from Florida to speak. As a matter of grace the Court will permit you to speak.

[fol. 782] ARGUMENT BY MR. BROAD

Mr. Broad: As stated repeatedly this morning, we are not at odds about cancelling these agreements, but there is a very substantial difference between us saying to the Court, "Judge, these agreements so far as we are concerned are ended for all time to come, and neither directly or indirectly will we do anything to reconstitute these agreements, but we are asking the Court please do not deport Holophane." True, Holophane was a British subject to begin with, but it became naturalized in 1925. We say to this Court, "Do not send us to England or France, because once we set foot on those shores we will be in tremendous difficulty." That is the point we make. That is why we object and protest the provisions of Article 11 of the Government's proposed decree. We say as long as we are on the west bank of the Atlantic we are within our rights to offer the concession of conceding that these agreements are illegal, but once the Government makes us go abroad, and bear in mind we are an engineering service, bear in mind that the prismatic glass we use is not like the salt case they quote, it is merely a tool in our kit, something that supplements our method of what we call scientific lighting—once we go abroad and engineer a job, we will probably land in tremendous trouble, as indicated by the British Nylon Spinners case, the cablegram

that I have received warning me, "Stay out of England, stay out of France."

[fol. 783] After all, our total assets of approximately a million and a half or less are in the form of brick and mortar and land in Newark, Ohio. The largest part of it is represented in fixed assets. We are unable to cope with what the Government demands of us. It is most unreasonable under these circumstances.

Why do we cling to the Timken decree? We say that the Timken decree, which resulted after extensive litigation beginning with the District Court in Cleveland, going right through the U. S. Supreme Court, involving issues far greater than were involved in this case, involving transgressions far beyond the alleged transgression in the Holophane case, still denied the Government the unusual relief that they asked in the Timken case. They don't tell you what they asked as distinguished from what they got. They are using the Holophane case in the nature of an experiment, a theoretical advance of the ground they want to gain in enforcement. If we are made to go into Europe either with no trade mark at all or inventing trade marks, if we are made to be pushed into new horizons, because of lack of capital, lack of manpower, we surely expose ourselves to dangers far beyond anything that is reasonably necessary to bring to an end, to a final end, whatever implications these agreements have that the Government complains about.

COLLOQUY BETWEEN COURT AND COUNSEL

Mr. Hummel: Your Honor, may I impose on your [fol. 784] good nature for just a few minutes. The statements has been made that the Timken case involved greater issues than the case which is now before this Court. I do not believe that that statement can be made without question. I am not sure that any case involving the international trade of this country involves greater issues than the one that is now before this Court. The reason is that you have heard in great frankness the proposition, "Judge, cancel the agreements. We won't live up to them in this country." What does that mean, they won't live up to them in this country? That means, "Don't

make us go abroad. Don't make us compete in a foreign country." Now, if that is not living up to the original agreements which have been in existence for twenty-seven odd years, I don't know any other way to state the proposition than that they are saying, "Let us live up to the agreements. Cancel them if you want to, but let us live to them."

The Court: Wasn't that the effect of the cablegram and letter, that you will live up to them if you come over to England?

Mr. Stevens: They would try and make us live up to them.

The Court: Didn't they tell you in plain, unadulterated language that they expected you to live up to them? [fol. 785] I am not saying how much force and effect that should have upon the decision of this Court. It is a question of justice, after all, as to how far the Court should go, and I don't think the Court will be unduly influenced by any threats from England or France, or anything to the contrary.

Mr. Hummel: Just one other point. On this question of how we are asking that they go abroad. There has been some talk about "deporting us." The decree which we offer doesn't say anything about sending any assets of the Holophane Company abroad. It doesn't say anything about their sending engineering service abroad. If they do that, they do it on their own hook. All we are saying is, "Put some advertisements in foreign countries. If some foreign purchasers want to buy your product, sell it to them." I don't see how that requires them to go abroad with any engineering service or anything else. They have a right not to go abroad with an engineering service. To live up to the decree all they have to do is offer goods for sale on non-discriminatory terms and to send notice abroad that they are doing this fact.

Now, as to the reaction of the co-conspirators, it may be adverse. They may be sued. We can't say they won't be. Our answer to that is that when they are sued is the time to decide that question and not now. We don't know [fol. 786] for certain that they will be sued, and if they are sued we do not know that a foreign court may not

give comity to the decree of this Court, which, after all, involves a question of the public policy of the United States.

The Court: Gentlemen, if you have anything additional to submit, you may get it to the Court within the next ten days as indicated.

Mr. Broad: What we want is the privilege to respond should it be found necessary.

The Court: There will be no response. You have argued this case today, and if you want to file anything additional you will file it with the Court. There will be no reply memorandum.

Mr. Seidler: If Your Honor please, there won't be any reply necessary to what we are going to submit. It is merely an amendment to the decree.

The Court: There will be no response to what anyone submits.

[fol. 787-788] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

AMENDMENT TO GOVERNMENT'S PROPOSED DECREE—
Filed May 14, 1953

Pursuant to the statement made by counsel for the Government during the course of oral argument on May 8, 1953, the Government's Proposed Decree as filed on December 1, 1952 is hereby amended by the addition of the following proviso, to be designated as subsection H of the paragraph numbered XI of the aforementioned proposed decree:

> Nothing contained in this paragraph XI shall be construed as requiring the defendant to export any of its products in derogation of the valid patent rights of any person in any foreign country.

(S.) Robert B. Hummel, Norman H. Seidler, Attorneys for the United States.

[fol. 789] [File endorsement omitted]

IN THE DISTRICT COURT OF THE UNITED STATES,
SOUTHERN DISTRICT OF OHIO, EASTERN DIVISION

Civil No. 2659

UNITED STATES OF AMERICA, Plaintiff,

vs.

HOLOPHANE COMPANY, INC., *Defendant*

JUDGMENT AND DECREE—Filed February 8, 1954

Pursuant to the findings of fact and conclusions of law filed herein, it is hereby ordered, adjudged and decreed:

I

This Court has jurisdiction of the subject matter hereof and of defendant, and the complaint states a cause of action against defendant under Section 1 of the Act of Congress of July 2, 1890, entitled "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies," as amended, commonly known as the Sherman Act.

II

As used in this judgment:

A. "Prismatic glassware" means glass products generally in the form of lenses, refractors or reflectors, bearing configurations or prisms in the form of lines or circles or both, which are designed to control the distribution and direction of artificial light.

B. "Illuminating appliances containing prismatic glassware" means lighting fixtures employing prismatic glassware to control the distribution and direction of artificial light, commonly used in institutional, commercial and industrial structures and in street and traffic lighting.

C. "Said products" means prismatic glassware and illuminating appliances containing prismatic glassware, or either of them.

[fol. 790] D. "Defendant" means The Holophane Company, Inc., a corporation organized and existing under the

laws of the State of Delaware, and maintaining offices in New York, New York, and a factory in Newark, Ohio.

E. "Limited" means Holophane Limited, a joint stock company organized and existing under the laws of the United Kingdom, with offices and principal place of business in London, England.

F. "Francaise" means Law Societe Anonyme Francaise Holophane, a corporation organized and existing under the laws of France, with offices and principal place of business in Paris, France.

G. "Person" means an individual, partnership, firm, association, corporation, or other business or legal entity.

H. "The territory of the defendant" means the continents of North and South America, the islands adjacent thereto, the Philippine Islands and Japan.

I. "The territory of Limited and Francaise" means all areas of the world other than those set forth above as the territory of the defendant.

III

The provisions of this judgment applicable to defendant shall apply to the defendant, its officers, agents, servants, employees, attorneys, subsidiaries, successors and assigns and all other persons acting under, through or for the defendant who receive actual notice of this judgment by personal service or otherwise.

IV

Defendant has violated Section 1 of the Act of Congress of July 2, 1890, 15 U.S.C., Section 1. Said violation has consisted of defendant and its co-conspirators, Limited and Francaise, engaging in an unlawful combination and conspiracy, and being parties to unlawful contracts, agreements, and understandings, in restraint of trade and commerce in prismatic glassware and illuminating appliances [fol. 791] containing prismatic glassware among the several states of the United States and with foreign nations.

V

Each of the following agreements is hereby declared and adjudged to be illegal and in violation of Section 1 of the Sherman Act, and is hereby declared to be cancelled; and the defendant is hereby enjoined and restrained from further performance or enforcement of any of the provisions of said agreements and any agreements amendatory thereof or supplemental thereto:

(a) Agreement dated September 15, 1925, between Holophane Limited and The Holophane Glass Company, Inc., and Holophane Illuminating Company, Inc., commonly referred to as the "Trading Agreement";

(b) Agreement dated as of September 15, 1925, between Holophane Glass Company, Inc., and Law Societe Anonyme Francaise Holophane, commonly referred to as the "Trading Agreement";

(c) Agreement dated February 1, 1944, between the defendant and Holophane Limited, which modified the "Trading Agreement" referred to in (a) above;

(d) Agreement dated June 11, 1945, between the defendant and Holophane Limited entitled "Intercompany Buying Agreement."

VI

Defendant is hereby enjoined and restrained from entering into, performing, enforcing, adopting, adhering to, maintaining or furthering, directly or indirectly, or claiming any rights under any contract, agreement, arrangement, understanding, plan or program for the purpose of or with the effect of continuing, reviving, or renewing any of the agreements listed in Section V of this Judgment.

VII

Defendant is hereby enjoined and restrained from entering into, performing, adopting, adhering to, maintaining, or furthering directly or indirectly, or claiming any rights [fol. 792] under any combination, conspiracy, contract, agreement, arrangement, understanding, or concerted plan of action with "Limited" or "Francaise" or any officer, director, employee, agent, sales representative, distributor, subsidiary, successor or assigns of said "Limited" or

"Francaise" or any person, firm, or corporation acti
directly or indirectly for or on behalf of said "Limited
or "Francaise":

(a) To allocate or divide territories or markets for t
production, sale or distribution of said products;

(b) To refrain from competing or to leave any pers
free from competition in any territory or market in t
production, sale, or distribution of said products;

(c) To take any steps or to use any means designed
hinder, limit, restrain or prevent the importation into
exportation from the United States of said products.

VIII

Defendant is hereby enjoined and restrained from:

A. Granting or receiving any license, immunity or oth
rights under any foreign patent or patents except upon
non-exclusive basis;

B. Agreeing to exchange patents, trade-marks, trad
names, technological information or know-how, or comme
cial information in any country with Limited or Francais

C. Agreeing to refrain from seeking patent, trade-ma
or trade-name protection in any country;

D. Granting or receiving any technological informati
or know-how to or from any foreign person except upon
non-exclusive basis;

E. Granting any person rights under trade-marks
trade-names in any foreign country where the purpose
effect of such grant is to interfere with the exportati
from the United States to such foreign country of goo
manufactured by the defendant.

F. Receiving from any person rights under trade-mar
or trade-names in any country where the purpose or effe
[fol. 793] of such receipt is to interfere with the import
tion into such country of goods manufactured by t
grantor of such rights.

IX

Defendant is hereby enjoined and restrained from:

A. Referring any order or inquiry or request for liter
ture relating to said products to "Limited" or "Fra

caise" or any subsidiary, agent, sales representative or distributor thereof;

B. Selling or offering to purchase said products from "Limited" or "Francaise" at preferential prices, discounts, or terms and conditions of sale where the purpose and effect of such action is to restrict competition in any territory or market in the production, sale, or distribution of such products.

C. Offering or paying to, or receiving or accepting from "Limited" or "Francaise" any commission, rebate, penalty, or other payment in connection with the sale or other distribution of said products to any other person in any territory or market where the purpose and effect of such action is to restrict competition in any territory or market in the production, sale or distribution of such products.

D. Utilizing "Limited" or "Francaise" or any person who is a distributor or agent of either as a distributor in any foreign country;

E. Acting as a distributor or agent of "Limited" or "Francaise" in any country;

F. Refusing to sell said products to any person at prices and on terms and condition of sale corresponding to those regularly offered to purchasers of the same classification for use or resale in defendant's territory, where a reason for such refusal is that such goods are for use or resale in the territory of "Limited" or "Francaise."

X

Defendant is ordered and directed:

A. To cancel and terminate in all contracts and agree- [fol. 794] ments with and invoices to customers and distributors such provisions as restrict or prevent said customers or distributors from reselling said products in any foreign country;

B. To notify all its customers and distributors that the defendant does not restrict or restrain the exportation or resale of said products manufactured or sold by the defendant in or to any foreign country;

C. To send a letter of notification to "Limited" and "Francaise" enclosing a copy of this Judgment and informing the aforesaid companies that they are no longer

obligated not to export goods to any country included in the territory of the defendant, including the United States.

D. To file a report with the Clerk of this Court within three months from the date of this Judgment, showing action taken in compliance with the terms of this Paragraph X.

XI

Defendant is ordered and directed:

A. To use reasonable efforts to promote the sale and distribution of said products in foreign markets, including the territories of "Limited" and "Francaise." Nothing contained in this paragraph shall be construed as requiring the defendant to export any such products in violation of the valid patent or trade-mark or trade-name rights of any person in any foreign country.

If, because of such rights, such exportation can be made into certain countries only by means of unmarked glass or the adoption of another trade-mark or trade-name for such exportation, then the defendant shall, within one year from the date hereof, have available sufficient quantities of unmarked glass or glass marked with a new trade-mark to be distributed under a new trade-name, if necessary, to meet reasonable anticipated foreign demand.

[fol. 795] B. To offer said products for sale and export to the territories of "Limited" and "Francaise" at prices and upon terms and conditions of sale not discriminatory as compared to those offered to purchasers for use or resale in the United States.

C. To take the following specific steps to promote and develop export sales of said products:

(1) To circularize within one year from the date of this Judgment known potential distributors of said products in the territory of "Limited" and "Francaise," seeking to employ their services in selling and distributing said products.

(2) Beginning six months from the date of this Judgment and for a period of five years thereafter, to insert advertisements at reasonable intervals in trade journals of appropriate circulation in all countries in which said products manufactured by "Limited" or

"Francaise" are sold in substantial quantities, of the manufacture and availability for sale of said products.

(3) To circularize within one year from the date of this Judgment all persons who from January 1, 1948 to date of this Judgment have made written inquiry to the defendant respecting the purchase or distribution of said products, exported to any country in the territory of "Libited" or "Francaise" informing them of the manufacture and availability for sale of said products.

(4) To respond in writing to all persons who from the date of Judgment make written inquiry to the defendant respecting the purchase or distribution of said products for export to the territory of "Limited" or "Francaise," advising them of the manufacture and availability for sale of said products.

D. To file a report with the Clerk of this Court each year for a period of five years from the date of this Judgment, [fol. 796] showing action taken in compliance with the terms of this Paragraph XI.

XII

For the purpose of securing compliance with this Judgment and for no other purpose, duly authorized representatives of the Department of Justice, shall, upon written request of the Attorney General, or an Assistant Attorney General, and on reasonable notice to the defendant, made to its principal office, be permitted, subject to any legally recognized privilege, (1) access during the office hours of said defendant to all books, ledgers, accounts, correspondence, memoranda, and other records and documents in the possession or under the control of said defendant relating to any matters contained in this Judgment, and (2) subject to the reasonable convenience of said defendant and without restraint or interference from it, to interview officers or employees of said defendant, who may have counsel present, regarding any such matters. No information obtained by the means provided in this Section shall be divulged by an representative of the Department of Justice to any person other than a duly authorized repre-

sentative of such Department, except in the course of legal proceedings to which the United States is a party for the purpose of securing compliance with this Judgment or as otherwise required by law.

XIII

Jurisdiction is retained for the purpose of enabling any of the parties to this Judgment to apply to this Court at any time for such further orders and directions as may be necessary or appropriate for the construction or carrying out of this Judgment, for the modification or termination of any of the provisions thereof, and for the purpose of the enforcement of compliance therewith and the punishment of violations thereof.

(S.) Underwood, Chief Judge, United States District Court.

[fol. 797] [File endorsement omitted]

IN UNITED STATES DISTRICT COURT

[Title omitted]

FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed February 8, 1954

This is an action by the United States of America to prevent and restrain the defendant, Holophane Company, Inc., from engaging in an allegedly unlawful combination and conspiracy and from being a party to contracts allegedly in restraint of interstate and foreign trade and commerce in violation of Section 1 of the Sherman Antitrust Act, 26 Stat. 209 (1890), 15 U.S.C. Section 1 (1940).

The case was tried before the Court, and the Court having carefully considered the evidence, together with the pleadings and briefs, and being fully advised in the premises, makes the following findings of fact and conclusions of law.

FINDINGS OF FACT

1. The defendant is a corporation, organized and existing under the laws of the State of Delaware, and main-

taining offices in New York, New York, and a factory in Newark, Ohio. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware.

2. The defendant transacts business and maintains a factory and is found within the Eastern Division of the Southern District of Ohio.

[fol. 798] 3. Holophane Limited, hereinafter referred to as "Limited", a joint stock company organized and existing under the laws of the United Kingdom with offices and principal place of business in London, England, is named as a co-conspirator. It is engaged in the sale of prismatic glassware and the manufacture and sale of illuminating appliances containing prismatic glassware.

4. La Societe Anonyme Francaise Holophane, hereinafter referred to as "Francaise", a corporation organized and existing under the laws of France, with offices and principal place of business in Paris, France, is named as co-conspirator. It is engaged in the manufacture and sale of prismatic glassware and illuminating appliances containing prismatic glassware.

5. Prismatic glassware includes reflectors, refractors, lenses and lens plates, bearing configurations or prisms in the form of circles or lines or both, and is used to control the distribution and direction of artificial light. Prismatic glassware incorporated into illuminating appliances may be used to direct artificial light to a small area or to diffuse artificial light over a wide area.

6. Illuminating appliances containing prismatic glassware are highly efficient and effective means of lighting factories, offices, schools, stores, hospitals, art galleries and radio broadcasting studios. Prismatic glassware is also used in transportation, marine, aviation, street and traffic lighting fixtures.

7. In 1948, the year prior to the filing of the complaint in this action, the total gross sales by the defendant of prismatic glassware and prismatic glassware fixtures were $3,517,365.75, of which, glassware sales amounted to $2,091,962.61 and fixture sales amounted to $1,425,402.14.

8. In 1921 "Limited" by patent license agreement

granted to "Francaise" the right to make and the sole, full [fol. 799] and exclusive license to sell prismatic glassware under the existing and future patents of "Limited" in Belgium, Spain, Portugal, Switzerland and Italy. The term of the agreement was five years from January 1, 1920, with option in "Francaise" to renew for a like term. "Francaise" exercised its option. In addition to royalty provisions, the license agreement provided that (a) articles manufactured under the license would be marked with the name "Holophane"; (b) "Francaise" would not use inventions, designs, or the trade name "Holophane" except in accordance with the license; (c) the parties would mutually exchange discoveries and improvements; (d) "Francaise" would prevent exportation from the licensed countries to other areas; (e) "Limited" would prevent the export into France or the licensed countries of Holophane goods.

This license, executed in 1921, was renewed with basically the same provisions in 1927, 1929, 1936 and 1940. The continuity of the license agreements was disrupted by the war, but a new license with similar terms was executed in 1947.

9. Otis A. Mygatt held the controlling stock interest in both "Limited" and "Francaise" in 1925. "Limited" held all of the stock of the Holophane Glass Co., Inc. Each company was separately managed. In addition, Charles Franck, now President of defendant, was Resident Manager of the American company from 1916 to 1925 and H. Hepworth Thompson, its General Manager. Mr. Thompson was also General Manager of "Limited". There is no evidence that Mygatt participated in the management of any of the companies.

10. In 1925, a group of executives, engineers and employees of the aforementioned Holophane Glass Company, Inc., organized the predecessor company of the defendant, for the purpose of purchasing the Holophane Glass Company, Inc., from "Limited". This group, which comprised the persons then actively engaged in the management of the Holophane Glass Company, Inc., was under the leadership of Charles Franck, then Resident Manager [fol. 800] of the company and currently President of the

defendant, and Joel B. Liberman, attorney for the company. On June 6, 1925, Joel B. Liberman obtained from "Limited" an option to purchase the stock of Holophane Glass Company, Inc., which he assigned to the aforementioned predecessor company of the defendant. The purchase price was $1,000,000. The net worth of Holophane Glass Company, Inc., was $1,197,312 for its land, buildings and equipment, the good will not having been evaluated.

11. After its purchase from "Limited", Holophane Glass Company, Inc., the New Jersey corporation, was merged into Holophane Illuminating Company, Inc., its purchaser, a New York corporation. The name of the latter was immediately changed to Holophane Glass Company, Inc., i.e. the name of the original American company. In 1926 the New York corporation again changed its name to Holophane Company, Inc. In 1929 Holophane Company, Inc., the New York corporation, was merged into defendant, a Delaware corporation of the same name.

12. On September 15, 1925, the defendant's predecessor and "Limited" entered into a trading agreement which was characterized by Joel B. Liberman as a reciprocal trade and patent agreement of great value. It was signed on behalf of "Limited" by H. Hepworth Thompson as Managing Director, and for the defendant's predecessor by Charles Franck as Vice-President. It contained no termination date, and was in effect at the time of the trial.

The essential features of the agreement are as follows:

(a) The territory of the defendant's predecessor is defined as that part of the Continent of America north of the Panama Canal and adjacent islands (not including the West Indies), the Philippine Islands, the Republic of Cuba, and the Empire of Japan. The territory of "Limited" is defined as the whole of the world except the territory of the defendant's predecessor and the Republic of France and its Colonies.

[fol. 801] (b) Each party agrees to use every means in its power to prevent the exportation from its territory into the territory of the other, of products sold or manufactured by it, except with the consent in writing of that party.

(c) Each party agrees that it will not carry on trade in the territory of the other, except at the request and for the benefit of that party.

(d) Each party agrees that it will neither apply for nor obtain patent or trade mark protection in the territory of the other, except at the request and for the benefit of that party.

(e) Each party agrees to communicate and assign every invention, design, discovery or improvement and trade mark to the other, and render any aid necessary to enable the other to secure proper protection in its territory.

(f) Each party agrees to supply to the other, when requested, Holophane products at a price equal to factory cost, plus 30%, delivered at place of manufacture.

(g) The agreement defines "Holophane products" as any product sold under the trade mark or trade name "Holophane" and/or manufactured or sold by either company.

13. On June 29, 1926, defendant's predecessor and "Francaise" entered into a patent and manufacturing agreement which had been prepared by Joel B. Liberman. The agreement was made effective as of September 15, 1925; contains no termination date; and in all of its essential terms is identical to the trading agreement between defendant's predecessor and "Limited". The agreement defines the territory of "Francaise" as the Republic of France and its Colonies. It was signed on behalf of the defendant's predecessor by Charles Franck as Vice-President and on behalf of "Francaise" by Andre Froget as L'Administrateur-Delegue.

14. When Joel B. Liberman, one of the founders of Holophane Illuminating Company, Inc., offered to sell said company, the contract which he had negotiated in his own [fol. 802] name with "Limited" to buy Holophane Glass Company, Inc., the New Jersey corporation, Mr. Liberman stated that he was able and did thereby offer similar advantages with "Francaise". The record, however, disclosed no specific obligation upon the defendant to enter into the agreement with "Francaise".

15. The restraints imposed by the agreements apply to

many countries of the world in which none of the companies have ever carried on business.

Although the agreements cover the entire world, the defendant admits that in 1925 there were many countries in the world in which neither the defendant, "Limited" or Francaise" carried on business; other countries in which they made only occasional or isolated sales; and that even to date there are a number of countries in which none of the three companies had made any substantial effort to develop a market.

The agreements contain schedules listing those countries in which the parties had patent and trade name and mark protection in 1925 and 1926. The schedules reveal that there were many countries within the territories of the defendant and "Limited" in which no patent or trade name or mark protection was listed.

16. The trading agreement between the defendant and Limited" has been modified and elaborated upon in each of the following instances:

(a) In 1927 an understanding between the parties modified the trading agreement to the extent that "Limited" agreed to order 50% of its refractor requirements for South America from the defendant, and to pay a bonus to the defendant on the remaining 50%. It further provided for a free interchange of commercial and engineering information, including the right to visit and study the plants of each. After being renewed twice, this understanding was cancelled by "Limited" in 1933.

[fol. 803] (b) In 1944 "Limited" sold to the defendant all of its rights to sell Holophane products in the South American territory; in exchange for $40,300 and an agreement for the mutual exchange of all research, technical, manufacturing and commercial information. The object of this transaction was to cement the relations between the two companies. On February 1, 1944, the parties entered into an agreement which extended the terms of the 1925 agreement to include South America in the territory of defendant. The parties also took this opportunity to reframe the definition of Holophane products to assure the application of the restraints to all products manufactured and sold by them, including products not subject to existing

patents or trade marks, and products not marked "Holophane." Also in furtherance of their mutual interests, they agreed to a full and free exchange of all research, technical, manufacturing and commercial information.

The parties also agreed that in any future agreement with "Francaise," "Limited" would insert a provision preventing "Francaise" from exporting into South American Territory, although at the time France was occupied by Germany, and the parties were uncertain as to the future organization of "Francaise" after the war. In 1947, when "Limited" again granted a patent license to the re-established "Francaise," this obligation was fulfilled by a provision in that license that neither "Limited" nor "Francaise" would permit the exportation of their products into the territory of the defendant.

(c) On June 11, 1945, defendant and "Limited" entered into an inter-company buying agreement, which elaborated upon that provision in the 1925 trading agreement which required the parties to supply each other with Holophane products. The new arrangements permitted a party to ship to and invoice directly, a customer located in the territory of the other but only at the request and for the benefit of the party owning the territory. It further per- [fol. 804] mitted the selling company to render engineering service directly to the customer to assure the securing of the order. Accordingly, new formulae were devised for determining the profit due the party into whose territory the shipment was made in order to compensate the selling company for the clerical and engineering service rendered.

It was also agreed that, with regard to any direct inquiries or purchase orders received by either company from the territory of the other, such orders or inquiries would be referred to that company for instructions.

17. The defendant and the co-conspirators, "Limited" and "Francaise," have adhered to and enforced the agreements set forth in Findings 12, 13 and 16 herein. The defendant has performed those acts and has adopted those policies which it was obligated to do pursuant to the specified provisions of the agreements as set forth in Findings 12, 13 and 16 herein.

18. In fulfillment of its obligations under the agree-

ients with "Limited" and "Francaise," the defendant as imposed upon its customers and dealers contractual bligations not to export products purchased from it into he territory of "Limited" and "Francaise." The defendnt rejects orders and requests for quotations from its ustomers whenever it suspects that the order is to be hipped into the territory of either "Francaise" or "Limted" and refers such customers either to "Francaise" r "Limited." This practice of the defendant has subtantially affected the foreign commerce of its customers.

19. Although the defendant's answer alleges that the estrictive agreements were "reasonable and necessary for he protection of the business and good will sold," the efendant failed to establish this defense. Moreover, the efendant failed to establish that the agreements were ubordinate to the alleged lawful purpose. The evidence stablishes that the restrictive agreements were designed o eliminate competition between the parties and with outiders in all markets of the world, and were neither measurfol. 805] able by, limited to, nor subordinate to the reaonable necessities of the sale.

20. The restrictive arrangements between the defendant nd the co-conspirators, "Limited" and "Francaise," are unreasonable restraint of the interstate and foreign ommerce of the United States in prismatic glassware and ppliances containing prismatic glassware.

21. The intended effects of the agreements between the efendant and the co-conspirators will continue unless preented by this Court.

Conclusions of Law

1. The court has jurisdiction of the subject matter ereof and of the defendant, and the complaint states a ause of action against the defendant under the provisions f the Act of July 2, 1890, entitled "an Act to protect trade nd commerce against unlawful restraints and monopoes," as amended, commonly known as the Sherman Act, 5 U.S.C. 1 et seq.

2. Beginning in or about 1925 and continuing at all times ereafter to the date of these findings, the defendant and e co-conspirators have been continuously engaged in a

combination and conspiracy in restraint of trade and commerce in prismatic glassware and illuminating appliances containing prismatic glassware among the several states of the United States and with foreign nations and have been and are now parties to contracts, agreements and understandings in restraint of such trade and commerce; all in violation of Sect. 1 of the Sherman Act.

3. Plaintiff is entitled to a decree.

Underwood, Chief Judge, U. S. District Court

[fol. 806] IN UNITED STATES DISTRICT COURT

[Title omitted]

MOTION FOR NEW TRIAL, TO ADMIT ADDITIONAL TESTIMONY FOR AMENDMENT OF AND ADDITIONAL FINDINGS OF FACT AND CONCLUSIONS OF LAW AND FOR ALTERING OR AMENDING THE JUDGMENT—Filed February 19, 1954

I. Motion for New Trial

Defendant, Holophane Company, Inc., respectfully moves the Court to grant it a new trial herein for the following reasons:

1. The judgment and decree entered by the Court herein February 8, 1954 is contrary to law.

2. The aforesaid judgment and decree of the Court in Paragraph XI A wherein it orders defendant to manufacture for exportation to certain countries either unmarked glass or glass impressed with another trade mark than that customarily used by defendant and to have sufficient quantities of such glass available to meet reasonable anticipated foreign demand is contrary to law.

3. The aforesaid judgment and decree of the Court in Paragraph XI C wherein it orders defendant to take certain specific steps to promote and develop export sales is contrary to law.

4. The aforesaid judgment and decree of the Court in Paragraph XI D wherein it orders defendant to file a report with the Clerk annually for a period of five years showing

action taken in compliance with said Paragraph XI is contrary to law.

[fol. 807] 5. The aforesaid judgment and decree in Paragraph VIII, subdivisions A, C, D, E and F wherein defendant is enjoined from certain acts at large without restriction either to its relationship, directly or indirectly, with Limited and Francaise or to its business in "said products" is contrary to law, is against the weight of the evidence and is not supported by the evidence.

6. Error of the Court in refusing to consider as evidence documents whose genuineness was admitted at the request of plaintiff under Rule 36 and which are filed with the Clerk in this case.

7. Error of the Court in rejecting the proposed Findings of Fact and Conclusions of Law filed by the defendant.

8. Error of the Court in adopting substantially verbatim the second proposed Findings of Fact and the Conclusions of Law submitted by plaintiff.

9. Error of the Court in failing to make any finding of fact showing the continuous close relationship of Otis A. Mygatt to defendant and its predecessors and to Limited and Francaise and in failing to make any conclusion of law with reference to the defense alleged in the pleadings under the doctrine of ancillary restraints.

10. Error of the Court in violating the rules of comity between nations by ordering defendant to take steps abroad which, if pursued, will subject defendant to litigation either by Limited or Francaise in the courts of their respective countries in which the judgment and decree of this Court will not be recognized in a suit upon the contracts abrogated in Paragraph V of said judgment and decree.

II. Motion to Admit Additional Testimony

Defendant respectfully moves the Court to admit in evidence the following documents the genuineness of which [fol. 808] defendant admitted *admitted* at plaintiff's request and which are in the custody of the Clerk of this Court in the files of this case: A-10, A-12, A-14, A-17, A-18, A-21, A-38, A-61, A-112 for the reason that said documents contain evidence showing the continuing interest of Otis A. Mygatt in the Holophane companies for many years,

the engineering skill requisite to merchandise Holophan products and the continuing closeness of relationship be tween Limited and Francaise.

III. Motion for Amendment and Additional Findings of Fact and Conclusions of Law

Defendant respectfully moves to amend the Findings o Fact and Conclusions of Law approved by the Court an filed herein February 8, 1954 and to adopt additional Find ings and Conclusions as follows:

1. Amend Finding of Fact No. 9 by inserting the wor "directly" after the words "that Mygatt" and before th word "participated" in the next to the last line and b further inserting in the last line after the first definit article the words "day to day" before the word "manage ment" so that the language in question reads ". . . tha Mygatt directly participated in the day to day manage ment . . ."

2. Adopt as an additional Finding of Fact based upo plaintiff's exhibits 1, 105 (Item III, 10), 106 (Item III, 10 and exhibit A-10, of which defendant has herewith move the admission, the following heretofore submitted as par of defendant's proposed finding 8:

Otis A. Mygatt purchased at par and for cash all of th authorized 4,000 shares of preferred stock of Holophan Illuminating Company, Inc., when it was organized in 192 for the purpose of acquiring Holophane Glass Company Inc. On October 15, 1925, slightly more than a month afte [fol. 809] the first meeting of the incorporators and sub scribers to the capital stock of the purchasing America company, said Otis A. Mygatt, a stockholder therein, wa unanimously elected to its Board of Directors and later i the same meeting unanimously elected President.

3. Adopt as an additional Finding of Fact based upo exhibits A-10, A-12, A-14, A-17 and A-18, of which defend ant has herewith moved the admission, the following al but the first two sentences of which were heretofore sub mitted as part of defendant's proposed findings 9 and 10

Officials of defendant kept in close touch with Otis A Mygatt who received a general monthly report of the finan cial condition of the company. Said officials likewise kep

in close touch with Limited and Francaise by frequent trips to Europe for conferences and meetings from 1925 to at least 1935. Preference shares of defendant were outstanding in September and November, 1935. In November, 1935, defendant authorized an offer to purchase the shares of Otis A. Mygatt and his wife in Limited. The offer contemplated purchase of 75% of the outstanding British shares for a consideration to be contributed in equal third parts by defendant, Francaise and a British corporation. Payment involved a $100,000 cash outlay and a guaranteed sum to Mr. Mygatt of 1,000 pounds a year. There is no evidence to show whether Otis A. Mygatt or his heirs, if he be dead, retain the control of Limited and Francaise which he held at the time of the purchase of Holophane Glass Company, Inc., or whether his stock interest in the predecessor of defendant has been eliminated by sale, redemption or otherwise.

4. Adopt as an additional Finding of Fact based upon the testimony of Clarence C. Keller at pages 29, 38 and 50-52 of the Transcript and exhibits A-21 and A-61, of which defendant has herewith moved the admission, the following:

[fol. 810] Defendant's products chiefly consist of prismatic glassware and illuminating appliances containing such glassware. The effective sale of such products requires engineering training and skill. Seventy-five (75%) per cent of defendant's sales result from its engineering service including the preparation of specifications for the job. All of defendant's salesmen are engineers.

5. Amend Finding of Fact No. 14 by striking the period at the end thereof and adding the following, based upon the patent license agreement (plaintiff's exhibit 7) referred to in Finding of Fact 8 and exhibit A-112, of which defendant has herewith moved the admission:

> " . . . but does show that Limited, the parent company of the original American Holophane, was bound by a contract still followed to safeguard Francaise against the exportation of Holophane goods into the territory of the French company."

6. Amend the Conclusions of Law by striking the second such conclusion, substituting conclusions numbers 2 and 3 heretofore proposed by the defendant and renumbering the conclusion now designated 3 as 4.

IV. Motion for Altering or Amending Judgment

Defendant respectfully moves the Court to alter or amend the judgment and decree heretofore entered February 8, 1954, as follows:

1. Amend Paragraph V (b) by striking the "3" and inserting "5" in the first line thereof so that the year designated is 1925.

2. Amend Paragraph VIII by striking subdivisions A, C, D, E and F and by adding the words ". . . except upon a non-exclusive basis." at the end of the present subdivision B.

3. Amend Paragraph XI by striking the second paragraph of subdivision A and all of subdivisions C and D and [fol. 811] by making the second sentence in the first paragraph of subdivision A a new and separate subdivision C in said Paragraph XI.

(S.) Shephard Broad, Lewis Horwitz, Richard F. Stevens, Attorneys for Holophane Company, Inc.

Of Counsel:

Broad and Cassel, 420 Lincoln Road, Miami Beach 39, Florida.

Baker, Hostetler & Patterson, 1956 Union Commerce Bldg., Cleveland 14, Ohio.

[fol. 812] In United States District Court

[Title omitted]

Supplemental Motion for Altering or Amending the Judgment—Filed April 5, 1954

Defendant Holophane Company, Inc., having served upon plaintiff on February 18, 1954, and thereafter on February 19, 1954, filed herein its Motion for New Trial

and other relief, including alteration and amendment of the judgment, hereby respectfully moves the court further to alter or amend the judgment and decree herein in supplement to its prior motion in that regard:

1. Amend Paragraph X B by striking the words "any foreign country" at the conclusion thereof and substituting in place of such language, "the territory of Limited and Francaise."

2. Amend the first sentence in Paragraph XI A by striking the words "foreign markets, including" in the second line thereof so that that first sentence relates solely to the territories of Limited and Francaise.

3. If, but only if, the motion heretofore made to strike the second paragraph in subdivision A should not be granted, amend the second paragraph in XI A by striking the words "certain countries" in the second line of said second paragraph and substituting therefor the language, "the territory of Limited and Francaise," and subject to the same condition precedent, further amend said second paragraph of XI A by striking the period at the end thereof and adding "within such territory of Limited [fol. 813] and Francaise."

The Affidavit of Clarence C. Keller, Vice President in Charge of Sales of Holophane Company, Inc., in support of this Supplemental Motion for Altering or Amending The Judgment is herewith submitted.

(S.) Shepard Broad, Lewis Horwitz, Richard F. Stevens, Attorneys for Holophane Company, Inc.

Of Counsel:

Broad & Cassel.
Baker, Hostetler & Patterson.

[fol. 814] In United States District Court

[Title omitted]

Affidavit of Clarence C. Keller in Support of Supplemental Motion for Altering or Amending the Judgment

Clarence C. Keller, being first duly sworn, says that he is of full age and is Vice President in Charge of Sales of the defendant, Holophane Company, Inc.

Affiant further says that he is thoroughly familiar with the pattern of distribution of Holophane products in Mexico and in Canada; that in Mexico defendant conducts its business through a highly skilled sales engineer who is a lecturer on electrical engineering at the University of Mexico and who received a year's further training in New York City at the headquarters of defendant before undertaking his work for it in Mexico; that said agent has Mexico as his territory by contract with defendant and that he covers the same in a manner identical with a sales engineer of defendant operating within any given state in the United States.

Affiant further says that it also has a distributor in Mexico who manufactures lighting fixtures using Holophane products and another distributor who conducts a wholesale business in complete fixtures for the electrical trade; that said distributors have contracts with defendant and regard Mexico as their sales territory and that it would be disruptive to the distribution practices and contractural obligations of the defendant if the present method of distribution and sales in Mexico could not be carried out.

[fol. 815] Affiant further says that its products are distributed in Canada by its wholly-owned subsidiary, Holophane Company, Limited, of Toronto; that said subsidiary corporation has existed for more than forty years and owns the Holophane patents and trade-marks in the Dominion of Canada; that said Holophane Company, Limited, although wholly-owned, is completely separate in its management and operations and that Holophane products are not normally shipped to customers from the United States into Canada but that inquiries for Holophane products

coming to defendant are referred to the Canadian subsidiary for service; that although most manufacturing and fabrication of Holophane products sold by the Canadian subsidiary are performed in the United States and shipped by the parent to said subsidiary, defendant desires to continue such an arrangement as an exclusively intracorporate matter; and that a requirement obliging defendant to permit sales of its products to go into Canada would greatly disrupt the established pattern of distribution of Holophane products and might lessen, rather than increase their consumption.

Affiant further says that no barrier to or diminution of trade or commerce results from the arrangements of defendant for the sale of its products in Mexico and Canada as above set forth; that defendant is vitally interested in the widest possible development of the markets in each of said countries and has determined, in its commercial and business judgment, that the largest expectation which it may realize will come from continuance of its present policies and practices and that the requirements of the judgment and decree herein, unless modified, will make [fol. 816] such continuance impossible.

Duly sworn to by Clarence C. Keller. Jurat ommitted in printing.

[fol. 817] In United States District Court

[Title omitted]

Stipulation and Order Striking Parts of Judgment and Decree—Filed February 9, 1955

We, the attorneys for the respective parties, do hereby stipulate that the Judgment and Decree heretofore entered on February 8, 1954, may be amended by striking that portion of the Judgment and Decree on page 6 thereof designated as XI A. and substituting therefor the following:

> A. To use reasonable efforts, including but not limited to the use of present or subsequent distribu-

tors or wholly-owned subsidiaries, to promote the sale and distribution of said products in foreign markets, including the territories of "Limited" and "Francaise." Nothing contained in this paragraph shall be construed as requiring the exportation by the defendant of any such products in violation of the valid patent or trade-mark or trade-name rights of any person in any foreign country. If, because of such valid patent or trade-mark or trade-name rights, such exportation can be made into certain countries only by means of unmarked glass or the adoption of another trade-mark or trade-name for such exportation, then the defendant shall, within one year from the date hereof, have available sufficient quantities of unmarked glass or glass marked with a new trade-mark to be distributed under a new trade-name, if necessary, to meet reasonable anticipated foreign demand.

It is further stipulated that defendant may, and it does hereby, withdraw that portion of its Supplemental Motion For Altering Or Amending The Judgment relating to said paragraph XI A. and found in branches 2 and 3 of said Supplemental Motion For Altering Or Amending The Judgment.

[fol. 818] (S.) Robert B. Hummel, Norman H. Seidler, Attorneys for the United States, (S.) Richard F. Stevens, Shepard Broad, Lewis Horwitz, Attorneys for Holophane Company, Inc.

Date: ——.

It is so ordered:

Underwood, United States District Judge.

[fol. 819] [File endorsement omitted]

IN UNITED STATES DISTRICT COURT

Civil No. 2659

UNITED STATES OF AMERICA, Plaintiff,

vs.

HOLOPHANE COMPANY, INC., Defendant

MEMORANDUM—Filed February 9, 1955

This cause came on to be considered upon the Motions of the defendant for a New Trial, to Admit Additional Testimony, for Amendment of and for Additional Findings of Fact and Conclusions of Law, for Altering or Amending the Judgment, and upon defendant's Supplemental Motion for Altering or Amending the Judgment.

The Court having carefully considered the same, and being fully advised in the premises, finds as follows:

The Motion for a New Trial is not well taken and should be overruled.

The Motion to Admit Additional Testimony is not well taken and should be overruled.

The Motion for Amendment of and for Additional Findings of Fact and Conclusions of Law is not well taken and should be overruled.

Branch 1 of the Motion for Altering or Amending the Judgment is well taken and should be sustained. Branches 2 and 3 of said motion are not well taken and should be overruled.

The Supplemental Motion for Altering or Amending the Judgment is not well taken and should be overruled.

Entry accordingly.

(S.) Underwood, Chief Judge, U. S. District Court.

[fol. 820] In United States District Court

[Title omitted]

Order Re Motions—Filed 6-2-55 Nunc Pro Tunc as of 2-9-55 WN

The Court by Memorandum filed February 9, 1955 having found that:

The defendant's Motion for a New Trial is not well taken and should be overruled;

The defendant's Motion to Admit Additional Testimony is not well taken and should be overruled;

The defendant's Motion for Amendment of and for Additional Findings of Fact and Conclusions of Law is not well taken and should be overruled;

Branch 1 of the defendant's Motion for Altering or Amending the Judgment is well taken and should be sustained, Branches 2 and 3 of said motion are not well taken and should be overruled;

The Supplemental Motion for Altering or Amending the Judgment is not well taken and should be overruled:

It is so ordered.

Underwood, Chief Judge, U. S. District Court.

[fol. 821] [File endorsement omitted]

In United States District Court

[Title omitted]

Notice of Appeal to the Supreme Court of the United States—Filed April 9, 1955

I. Notice is hereby given that Holophane Company, Inc., the defendant above named, hereby appeals to the Supreme Court of the United States from the judgment and decree entered in this action on February 8, 1954 at 10:00 a.m. Defendant's motion for a new trial, to admit additional testimony, for amendment of and additional findings of fact and conclusions of law and for altering

and amending the judgment, which motion was served on February 18, 1954 and filed on February 19, 1954, and defendant's supplemental motion for altering and amending the judgment, which motion was served April 2, 1954 and filed April 5, 1954, were overruled by the District Court on February 9, 1955 at 10:00 a.m.

This appeal is taken pursuant to 15 U. S. C., §29.

II. The clerk will please prepare a transcript of the record in this cause, for transmission to the Clerk of the Supreme Court of the United States, and include in said transcript the following:

1. Copy of the docket and journal entries herein.
2. Complaint.
3. Answer.
4. Request for Admissions filed by plaintiff, including all documents referred to therein or submitted therewith. [fol. 822] 5. Sworn statement of Lewis Horwitz denying certain items in the Request for Admissions.
6. Opening statements of counsel, the testimony heard and exhibits offered upon trial.
7. Government's proposed decree dated December 1, 1952.
8. Government's proposed findings of fact and conclusions of law dated December 1, 1952.
9. Defendant's proposed findings of fact and conclusions of law served January 19, 1953.
10. Defendant's proposed form of decree served January 19, 1953.
11. Government's second proposed findings of fact dated February 4, 1953.
12. Arguments of counsel upon form of decree and findings of fact and conclusions of law presented May 8, 1953.
13. Amendment to Government's proposed decree served May 13, 1953.
14. Judgment and decree entered February 8, 1954.
15. Findings of fact and conclusions of law entered February 8, 1954.
16. Defendant's motion for new trial, to admit additional testimony, for amendment of and additional findings

of fact and conclusions of law and for altering or amend-
ing the judgment served February 18, 1954 and filed Feb-
ruary 19, 1954.

17. Defendant's supplemental motion for altering or
amending the judgment together with affidavit in support
thereof served April 2, 1954 and filed April 5, 1954.

18. Stipulation of counsel to amend paragraph XI A
of the judgment and decree entered February 8, 1954.

[fol. 823] 19. Memorandum of Court filed February 9
1955 denying defendant's motion for a new trial, to admit
additional testimony, for amendment of and additional
findings of fact and conclusions of law and for altering
or amending the judgment and defendant's supplemental
motion for altering or amending the judgment.

20. Entry of Court pursuant to memorandum referred
to in 19 above.

III. The following questions are presented by this
appeal:

1. Are contracts imposing territorial and other restric-
tions upon parties to the sale of a business *per se* violative
of the antitrust laws?

2. If the answer to the preceding question is in the
negative, do such contracts become *per se* unlawful when
they are made between corporations formed under the
laws of different countries, including the United States
and divide the geographical area of the world into markets
among the contracting parties?

3. If the answer to each of the foregoing questions is in
the negative, was it not a proper ancillary restraint for
Holophane, Ltd., a British corporation controlled by a com-
mon dominant individual shareholder with Societe Anonyme
Francaise Holophane, a French corporation, to impose ter-
ritorial and other restrictions upon the American purchas-
ers of the wholly owned subsidiary of Holophane, Ltd.
which is the predecessor of the defendant herein?

4. Was it proper for the Court to enjoin Holophane
Company, Inc., as it did in paragraph VIII B, of the judg-
ment and decree from agreeing to exchange patents, trade
marks, trade-names, technological information or know
how or commercial information in any country with Holo-
phane, Ltd., or Societe Anonyme Francaise Holophane?

[fol. 824] 5. Is there power in a United States District Court, which has jurisdiction solely over the American member of an illegal cartel arrangement, upon determining to enjoin future adherence to the contracts upon which said cartel arrangement is based, to order the American defendant to perform affirmative acts in carrying on business in the nations of the other parties to said contracts in violation of the terms thereof?

6. If such power as is described in the immediately preceding question exists, should it ever be exercised?

7. If such power as is described in the two immediately preceding questions exists, should it be exercised in this case and thereby expose Holophane Company, Inc. to potential suits for damages or injunctive relief in the courts of foreign nations in which the decree of the United States District Court will not or may not be a defense?

Shepard Broad, Lewis Horwitz, Richard F. Stevens,
Attorneys for Holophane Company, Inc.

[fol. 825] Proof of Service (omitted in printing)

Duly sworn to by Richard F. Stevens. Jurat omitted in printing.

[fol. 826] Supreme Court of the United States

[Title omitted]

Appeal from the United States District Court for the Southern District of Ohio.

Order Noting Probable Jurisdiction—October 10, 1955

The statement of jurisdiction in this case having been submitted and considered by the Court, probable jurisdiction is noted.

Mr. Justice Harlan took no part in the consideration or decision of this question.